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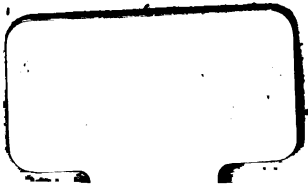

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C.C.STURM.

Pub. June 1807, by James Cundee, London.

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Sturm's REFLECTIONS.

PRINTED FOR JAMES CUNDEE, LONDON.

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REFLECTIONS

ON THE

WORKS OF GOD,

IN THE VARIOUS KINGDOMS OF

NATURE,

AND ON

THE WAYS OF PROVIDENCE,

DISPLAYED IN THE GOVERNMENT OF THE UNIVERSE.

Translated from the German

OF

CHRISTOPHER CHRISTIAN STURM,

Minister of the Church of St. Peter, and Director of the Public School at Hamburg.

BY FREDERIC SHOBERL.

IN FOUR VOLUMES.

VOL. I.

ALBION PRESS:

PRINTED FOR JAMES CUNDEE,

Ivy-Lane, Paternoster-Row.

1808.

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TRANSLATOR'S

PREFACE.

THE nature of the Reflections contained in these volumes, is so well known to the English reader, as to render it unnecessary to make any observations on that subject. The manner in which the pious author has treated the various circumstances, which pass successively in review, has already received the stamp of public approbation, so that any eulogy from me would be wholly superfluous Some however, I know are disposed to find fault with the moral and religious reflections which the author has introduced into every page of his work, and to censure them as dry and tedious. Without attempting any vindication I shall only request the attention of such to the following sentiments of an eminent philosopher and divine of our own country.

"It is by frequent meditation upon a subject, by placing a subject in different points of view, by induction of particulars, by variety of examples, by applying principles to the solution of phænomena, by dwelling upon proofs and consequences, that mental exercise is drawn into any particular channel.—If one train of thinking be more desirable than another, it is that which regards the phænomena of Nature with a constant reference to a supreme intelligent author. To have made this the ruling, the habitual sentiment of our minds, is to have laid the foundation of every thing which is religious. The world

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from thenceforth becomes a temple, and life itself one continued act of adoration. The change is no less than this, that whereas, God was formerly seldom in our thoughts we can now scarcely look on any thing without perceiving its relation to him. Every organized natural body, in the provisions which it contains for its sustentation and propagation, testifies a care on the part of the Creator expressly directed to these purposes. We are on all sides surrounded by such bodies; examined in their parts wonderfully various; compared with one another no less wonderfully diversified. So that the mind as well as the eye may either expatiate in variety and multitude, or fix itself down to the investigation of particular divisions of the science.

"And in either case it will rise up from its occupations possessed by the subject, in a very different manner, and with a very different degree of influence from what a mere assent to any verbal proposition which can be framed concerning the existence of the Deity, at least that merely complying assent with which those about us are satisfied, and with which we are too apt to satisfy ourselves, will or can produce upon the thoughts. More especially may this difference be perceived in the degree of admiration and of awe with which the Divinity is regarded when represented to the understanding by its own remarks, its own reflections, and its own reasonings compared with what is excited by any language that can be used by others. The works of Nature want only to be contemplated; when contemplated they have every thing in them that can astonish by their greatness."*

That the labors of Sturm are admirably calculated to lead the minds of the youthful and of the illiterate into the train of thinking from which Paley here promises such

* Paley's Natural Theology, page 584-587.

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beneficial effects, no person, will, I presume, have the boldness to deny.

Those who know how many English versions of these moral, pious, and deservedly popular Reflections have been given to the public, may, perhaps be, at first, inclined to consider the present translation as an unnecessary undertaking. I flatter myself, however, that it will not cost me much trouble to convince, at least, the majority, that it is not altogether superfluous.

It may, in the first place, be observed, that most of the preceding translations of this work, executed from the French version, are only abridgments, or more properly speaking extracts from the original; many of the pieces which it contains being wholly omitted, and great retrenchments being made from others. To readers seriously disposed these omissions must occasion the more disappointment, as they principally consist of moral and religious inferences and reflections, deduced from the subject immediately under the author's observation. In these volumes, on the contrary, it has been my endeavor to give a complete transcript of the original performance, from the latest German Edition.

It is now about thirty years since Sturm's work first made its appearance; and never, perhaps, did so short a period produce so many discoveries and improvements in the various departments of science. One natural consequence resulting from this rapid increase of human knowledge is, that many portions of his book are now antiquated and erroneous. To this point no attention has been paid in any preceding English translation. The corrections and additions which a reference to the most celebrated modern scientific works has enabled me to make, if they afford no evidence of ability, will however, I trust, shew some industry,

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and prove to the generality of readers an accession equally useful and pleasing.

It is not without regret that I find myself obliged to apologize for my inability to redeem the promise of a life of the author with which this translation of Sturm's Reflections was designed to have been accompanied. Repeated inquiries have convinced me that no materials for such a biographical account are to be found in this country, and the interruption of our communication with continental Europe, has prevented all application for those which might otherwise have been procured from abroad.

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AUTHOR'S

PREFACE

TO THE THIRD EDITION.

WHEN this work first made its appearance, exactly one hundred years had elapsed since the pious Scriver *published his* Occasional Meditations on the Works of Art and of Nature. *I am not ashamed to acknowledge that I esteem this performance very highly, and prefer it to many books of devotion of the present century, alike destitute of taste and feeling. Though its style and manner are not, in every respect, adapted to the superior refinement of our age, it nevertheless possesses other advantages which abundantly compensate the readers of* Scriver's *works for these trifling defects. His ardent zeal in behalf of practical Christianity, his sterling sense, his lively imagination, his language in general suited to the understanding of the vulgar, his intimate acquaintance with the works of nature and of art, and the familiar tone in which he addresses his readers, are, in my opinions advantages which are not to be found in many religious works, either of the past or of the present century.*

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The esteem which I have ever entertained for Scriver's *book inspired me with the first idea of attempting a similar composition. By means of Reflections on the works of God in the Kingdom of Nature and of Providence, I sought to accomplish a twofold purpose. On the one hand I was desirous of presenting to the illiterate what is most essential to be known relative to the objects which God has displayed to our view in the empire of nature. Accordingly I have selected from the widely extended circle of natural phenomena, those by which we are daily surrounded, and for an historical knowledge of which no extraordinary capacity is required. I have endeavored to express myself with such perspicuity, and to exhibit every subject in such a light, as to render it both interesting and intelligible to the most unenlightened Christian. With this design I studied to combine a second, that is, to point out to my readers how they may convert the kingdom of nature into a school for the heart.*

In order the more effectually to accomplish these intentions, I found it necessary to avail myself of all the resources which the works of celebrated naturalists afforded me. I have, therefore, not hesitated to address my readers in the language of a Buffon, a Derham, a Pluche, a Nieuwentyt, a Sulzer, a Bonnet, and other writers of that class, whenever I thought it more perspicuous or impressive; and I

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must not here omit to mention with gratitude the friendly assistance of the Reverend Mr. Lorenz, who not only composed some of these Reflections, but who, from his extensive knowledge of nature, communicated to me much information, which I have employed for the instruction and edification of my readers.

Many corrections and additions have been made in this new edition. These will, I hope, give it a farther advantage over the piracies which certain rapacious booksellers have published at three different places. I should gladly have availed myself of the observations which the Swedish translator has subjoined to my work, had I possessed a competent knowledge of the language.

STURM.

Hamburg, July 24th, 1784.

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REFLECTIONS

ON THE

WORKS OF GOD,

&c. &c.

JANUARY 1.

REFLECTIONS ON NEW YEAR'S DAY.

CONSIDERING this first day of the year as the first day of my life, I venture to anticipate from the goodness of my God, at this commencement of the year, as many blessings as he decreed for me during my whole life, on my entrance into the world. What favors may I not expect from my heavenly Father, who, from the very first moment of my existence, nay, even before I was born, thought of me with so much tenderness and mercy!

When I came into the world he caused me in my parents to find friends, who, with disinterested affection, supplied all my wants, and supported me in my helpless and necessitous condition. Without their fostering care, and tender solicitude for my well-being, I should not now possess health, strength, and the other blessings of life. Had I then been able to reflect on my future destiny, I had doubtless promised myself the enjoyment of many agreeable hours in my progress through life; but now

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that I am capable of this reflection, now will I freely indulge the sensations of my present happiness, and thence deduce the most delicious hopes of future felicity. This day I enter into a new period of my life, and though not so helpless as at the time of my birth, yet as much in need of assistance as I could then possibly be. I have occasion for friends, to smooth the asperities of life, to cheer my spirits drooping beneath the pressure of adversity, and to afford me protection in the hour of danger. And can I doubt that my heavenly Father will grant me this blessing? No, I am convinced that, whatever may betide me in the course of this year, the Lord has provided for me a friend to be my adviser in cases of doubt and perplexity, my support in misfortune, my companion in prosperity, and my guide when I go astray.

In the first moments of my existence God laid the foundation of my future destiny. It was not by accident that I was born precisely of such parents, in such a country, and at such a period. Both the time, the place, the circumstances, and the consequences of my birth, were arranged by the Almighty in the wisest manner. He then fixed my lot, prescribed the sufferings I was to endure, and assigned for me those pleasures that were to gladden my heart. By his command many causes then unknown to me co-operated toward my happiness; and all that had relation to my life was enjoined to fulfil his gracious intentions. With this first day of the year, my lot is, as it were, regulated anew. The Lord who gave me life surveys with unerring eye every week, day, and moment of this year. From me, indeed, the events of my future life are concealed; but they are known to the Lord, who

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governs all things according to the decrees of his wisdom and mercy. If, in the course of the present year, I smart beneath the stroke of unexpected misfortune, or if unforeseen blessings and pleasures fall to my lot, I will confidently believe that nothing can happen but by the direction of my God.

With this conviction I enter upon the new epoch of my life which this day commences. Be my fate whatever it may, I will maintain and strengthen my belief, that the Almighty will be my God and Father in my old age as well as in the days of my youth. Should tribulations befal me, I will call to mind my infant years, when I was in a situation still more critical, and when God took compassion on me. Should I experience the infidelity of a friend, even this shall not disturb me. God will certainly raise me up other friends, in whose affection I may find happiness and joy. Should my life be threatened by persecutions and perils, which seem to baffle all my vigilance and foresight, these shall not terrify me. I put my trust in the Lord, who protected me when exposed during my infancy to a thousand dangers.

What then can prevent me from commencing this year with tranquil resignation? Without solicitude will I look forward to the coming days, and leave to the Lord the direction of my fate. I will tread the path that he points out to me, and will thank him at each step for conducting me in a manner so truly wonderful and gracious.

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JANUARY 2.

EXHORTATION TO GRATITUDE FOR BLESSINGS WHICH GOD CONFERS ON US IN WINTER.

WERE we to pay greater attention to the works of God than we commonly do, we should find, even in this season, ample and manifold reasons to rejoice at the goodness of the Almighty, and to extol the wonders of his wisdom. Few, certainly, can be so insensible as not to feel some emotions of joy and gratitude excited in their bosoms, when they observe the beauties of Nature in spring and summer, and the rich blessings with which God crowns the autumnal season. But persons possessing even the most tender hearts seldom feel these sentiments of mingled joy and gratitude, when they behold the fields despoiled of all their fruits and of all their charms; when the bleak north wind howls around their dwellings, and chilling cold benumbs the earth and its inhabitants. But is then this season so destitute of the blessings of heaven, as to be incapable of kindling gratitude and piety in the hearts of men? By no means. Accustom yourselves only to be more attentive to the works of God, more grateful for the smallest proofs of his goodness, and winter will afford you many occasions to praise your beneficent preserver.

Consider only how miserable you would be, had you, during this intense cold, neither fuel, nor beds, nor clothing to keep you warm. How gracious is the Lord towards you, in providing with such loving kindness for your wants, and in supplying you, even in this most barren season, with

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Blessings which God confers in winter.

all the necessaries and conveniencies of life! Perhaps at this very moment you are enjoying the comfortable warmth of fire. Ought you not to return thanks to the Lord, who has provided fuel in such abundance, that even the most indigent can procure a sufficiency.* You lie down in a comfortable bed; a blessing which every night should excite your gratitude to God, especially if you reflect how many wretched creatures on the face of the earth have no bed to protect them from the cold. You have clothing, and perhaps in such superfluity that you may easily bid defiance to the severity of the weather. Should you not consider this a blessing, think on the state of numbers of your fellow-men, who wander about half covered with rags, and who can scarcely move their benumbed limbs. Had they but the half of your clothing, how happy would they esteem themselves! And do you hesitate to acknowledge your happiness? Do you withhold your gratitude from your beneficent Creator for the blessing of warmth?

* If any region under heaven seems to have been more highly favored in this respect than the rest, that region is Britain. If her increasing population has rendered it impossible to retain such vast forests as we find in many other regions of the globe, how amply is that deficiency compensated by the inexhaustible stores of coal, contained in the bowels of the earth in almost every part of our island! Exclusive of the superior qualities of this species of fuel for the various purposes of domestic economy, Nature presents it to us in this profusion without requiring us to contribute, by the smallest degree of trouble or labor, towards its production; and the bosom of the same soil, whose surface, perhaps, supplies us with the staff of life, she has impregnated with a material not much less necessary to the comfort of our existence. T.

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But this is not all. Were we enabled to discover the general concatenation of things that reigns throughout universal Nature, how great would be our admiration of the bounty and wisdom of God! But though our faculties are far too feeble and confined to embrace the whole, yet we can perceive sufficient to convince ourselves that the divine government is infinitely wise and beneficent. Were there no winter, spring and summer would not have so many charms; the fertility of our fields would be greatly diminished; commerce would cease in many provinces, and a considerable portion of the woods and forests would have been created to no purpose. In this point of view the utility of winter is incontestible: and supposing even that the advantages of this season were not so obvious, this reflection that winter is the work of God as well as summer, ought to convince us that it was created by him for some wise end. Whatever proceeds from him must be good.

Lord! almighty and most merciful Creator! pardon me, if, through ignorance, I have hitherto found fault with thy works and dispensations. Forgive the ingratitude of which I have so often been guilty, while enjoying the blessings thou conferrest during this season. Yes, even in winter thou grantest me more benefits than I deserve, or am able to express. If I have heretofore viewed thy goodness with indifference, if I have undervalued thy bounty, my future life shall, at least, evince more attention and gratitude. When I feel, in winter, the genial influence of fire, when my limbs are covered with warm clothing, or when, in a soft and comfortable bed, I enjoy the blessings of refreshment

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and repose, then will I thank thee, O Preserver of my life! for having thus bountifully provided for me during this inclement season.

JANUARY 3.

DAILY PROOFS OF THE PROVIDENCE OF GOD.

To discover the ways of Providence only in extraordinary cases, is to betray our ignorance and weakness. In the ordinary course of nature we daily behold a thousand things worthy, in every respect, of exciting our notice and admiration. The formation of a child in the womb of the mother is as great a miracle of the divine power and wisdom, as the creation of the first man from the dust of the earth. The preservation of our life, considering the variety of causes and effects which combine to produce it, is not less astonishing than the resurrection of the dead. The only difference is that the one happens but seldom, whereas we are daily witnesses of the other, which, being so common a phenomenon, does not attract our attention, or sufficiently excite our admiration.

Certainly my own experience ought to produce the fullest conviction that a divine Providence watches over the preservation of my life. A thousand unknown and hidden causes may shorten my life, may stop my breath, or freeze my blood. Alas! I feel but too sensibly how incapable I am of preserving my life, of supplying the wants, or of averting the various dangers with which I am surrounded. Subject to so many corporeal infirmities, from which I am never entirely exempted, to so many wants relative both to my body, my

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soul, and external situation, I am thoroughly convinced, that without the preservation and tender care of my God, I should be a most miserable creature. The union of my soul and body, their reciprocal and continual action on each other, are incomprehensible, and do not depend either on my own will or power. The beating of the pulse, and the circulation of the different fluids are uninterruptedly carried on, without my being able to contribute to them in the smallest degree. Every thing convinces me that my faculties, my condition, and the duration of my being, are not dependent on my own pleasure. It is the Lord, who, by his secret and absolute power, preserves me in strength, motion, and existence. If my respiration is not stopped; if my blood has not ceased to circulate; if my limbs have not yet lost their strength; if the organs of my senses are still capable of performing their proper functions, and I still possess the power of reason and the faculties of my mind; it is to the bountiful providence of God alone that I am indebted for these blessings.

But how happens it that I think so seldom, and with so little gratitude, on these manifestations of divine Providence, which are daily displayed to my view? Should not the reflections I have just made be ever present in my heart? Should I not, at least, every morning and every evening of my life, meditate on the gracious preservation of my Creator, admire it, and praise him for it? Yes, it is but reasonable that I should act thus, and by my gratitude distinguish myself from the inferior classes of animals, which are not endowed with the faculty of contemplating the works of Providence.

O Lord, thou preserver of my life, direct thou

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my heart to the contemplation of the wonders of thy goodness! Render my soul susceptible of that rapture which filled the heart of David, whenever he meditated on thy works. And when I have received a blessing, however small it may appear, make me sensible of its worth, teach me to acknowledge, to the praise of thy bounty, that thou alone conferrest all that is good on the children of men. Then may I with truth exclaim in the words of the pious patriarch; "I am not worthy of the least of all the mercies and of all the truth which thou hast shewed to thy servant."

JANUARY 4.

MANIFOLD USES OF FIRE.

FIRE is, in some sort, the universal instrument of all the arts and helps to supply all our necessities. That man might have this element, so indispensably necessary for his preservation, constantly at hand for his use, our Creator has placed it not only in the water and the air, but has also enclosed it in all fat and oily substances.* And how useful are those combustible matters, which are requisite

* It is now generally admitted, and it has indeed been placed beyond a doubt by a number of nice observations made by the late ingenious Dr. Black, of Edinburgh, that absolute heat or fire is absorbed by all bodies whatever, and that it is absorbed in greater quantities by fluid than by solid substances. Heat, therefore, he regarded as the cause of fluidity. Considered in this point of view, it is obvious that the advantages derived from its agency and influence must be incalculable. T.

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Manifold uses of fire.

to keep up fire. Without a sufficient provision of them we should be deprived of the most important comforts, and exposed, at the same time, to the greatest inconveniencies. Without fire, the greatest part of our time, in winter, would be spent in dreary darkness! Our most agreeable occupations, which the light enables us to pursue, would then end with the setting sun. We should be obliged to sit motionless, or to wander about with terror in the dark amidst a thousand dangers. Consider only how melancholy would be our condition, if, in these long winter-evenings, we could neither enjoy the pleasures of social intercourse, nor employ ourselves in reading, writing, or useful labor. How unprofitable, how innutritive and unwholesome would be most of the aliments which the earth produces, were they not softened, dissolved, and prepared by the action of fire; and how should we procure so many other necessaries and conveniencies of life, were not artists and mechanics enabled to supply us with them by the aid of fire! Without this element we could not give our garments so many different colors; we could not melt metals, so as to purify and render them ductile; we could not convert sand into glass; transform stones into lime; or impart to clay the consistence of stone. Without fire, universal Nature, with all her riches, would become almost useless to us, and would lose, in our eyes, the greatest portion of her charms.

But, let us confine ourselves to the advantages, for which, at this present moment, we are indebted to fire. What comfort do we enjoy in this apartment which it warms, and which defends us from the chilling influence of the external air! In the most intense frosts we should either be compelled

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Manifold uses of fire.

to pass the winter in listless inaction, or, at least, under very disagreeable sensations, unless the genial warmth of fire communicated to us a certain degree of activity and life. How many persons, laboring under the burden of age or consumptive maladies, would doubly suffer, during that season, if their enfeebled bodies were deprived of the cheering influence of that element! How deplorable would be the condition of the tender infant, if its delicate limbs were not refreshed and invigorated by warmth! O ye children of poverty, who would gladly sacrifice a part of your scanty pittance of bread to procure fuel to warm your shivering limbs, —I pity you from the bottom of my heart! Your condition reminds me of a new portion of my happiness, which I had not yet learned to appreciate so highly as I ought; and more powerfully impresses upon my mind the duty of gratitude to my heavenly Father for the benefits I receive from the heat of fire!

O God! my creator, my benefactor! my heart overflows with love and gratitude to thee. To thy paternal care I owe all the comforts and conveniencies I enjoy through the medium of fire. It is thou who hast caused the earth to produce fuel in abundance. Thy bounty so amply provides for our various wants, that no season of the year is destitute of thy blessings. I praise thee at this present moment for this proof of thy goodness. Grant that the fire may ever prove as refreshing and invigorating as at this moment, and never may it become, either to me or my brethren, an instrument of thy wrath!

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JANUARY 5.

WINTER AMUSEMENTS.

In this season, which, from prejudice, a great portion of mankind consider as affording little pleasure, each, according to his taste, endeavours to procure such amusements as he thinks best calculated to divert him, and to make the long winter-evenings pass agreeably away. We meet with men whose only study it is in winter to compensate for the dreariness of the season by indulging in dissipation, noisy company, and other unprofitable amusements. It is melancholy to observe the efforts which many persons make to shorten, by inactivity or frivolous pursuits, those days which are already so short. The day is commonly devoted to a circle of occupations, which correspond neither with the destination of the Christian, nor with the dignity of the man. An hour after sun-rise* the voluptuary leaves his couch. He projects, during breakfast, the amusements to which he shall sacrifice the new day. In listless indolence he awaits the hour of dinner. It arrives; with eager appetite he devours his repast. Satiated, or rather overloaded with the immoderate use of his food, he throws himself upon his bed, that he may regain

* Had Sturm enjoyed an opportunity of observing the manners of the great world in the British metropolis, he certainly would not have fixed so unfashionable an hour for the rising of his voluptuary. With respect to many of our sons and daughters of dissipation, it may be questioned, whether the substitution of *sun-set* for *sun-rise*, would not come considerably nearer to the truth. T.

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sufficient strength to support new excesses. The hour arrives when he is either to repair to a tumultuous company, or when a circle of noisy friends is to assemble at his own house. For the first time since the rising of the sun, he shews, at the gaming table, that he is endued with a soul. With the cards in his hand, the hours fly rapidly away; and this human brute hastens from his cards to his supper, and from his supper to his bed. There he tosses whole sleepless hours upon his couch, or frightful dreams disturb his slumbers.

This, however, is not perhaps the most reprehensible manner in which we waste the short days and long evenings of winter. How ingenious is man in devising amusements to abridge the time allotted to him! Now the chace calls him into the fields, to enjoy the barbarous diversion of hunting down the fearful hare, or the timid deer, and by this boisterous sport to disturb the repose of rural nature. Now voluptuousness leads him to the luxurious ball, where he very often loses not only the innocence of his heart, but also health of body and peace of mind. At other times he is enraptured with the delights of the theatre, where passions gliding imperceptibly into his heart, and gaining strength in his bosom, render him incapable of relishing genuine pleasures; or he runs to feasts and other diversions, whither guilt and sin frequently follow in his train.

Perhaps it is unnecessary for me to enumerate to you any other of the amusements which constitute the usual pastimes of winter. But permit me to remind you of the duties which you have to fulfil in regard to amusements. I do not blame the inclina-

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tion to society, which the season itself renders particularly necessary; but take heed lest this propensity degenerate into a ruling passion, and subdue your whole soul. Though your social parties may not offend in the slightest degree against virtue and morality, yet they may be detrimental to you, if they occupy too much of your time, and cause you to neglect your vocation, or derange your domestic ecpnomy. Amusements were given us by our Cretor, not for our daily work, but as a recreation. If you strive to gratify this inordinate passion for the pleasures of this life, you run the risk of missing the important end of your being, and of indulging in such enjoyments as may be productive of repentance and remorse. I would particularly caution you to make a discreet choice of your social amusements in these days of winter. Waste not your time, therefore, in such as you cannot enjoy without prejudice to your reputation, to your virtue, or to the well-being of your family. Never let those silly, thoughtless pleasures which may give offence to your neighbor, excite the complaints, or force tears from the eyes of your fellow-creature, or which violate the duties imposed by society and religion, find entrance in your heart. Suffer not the most innocent amusements to obtain such an ascendancy over you, as to render you insensible to the more pure and solid pleasures of Christianity, or to deprive you of all relish for serious occupations.

Govern thou my heart, O God, that, while I am tasting earthly joys, I may never forget thee. May the recollection of thy omnipresence attend me in my intercourse with mankind. May I prefer the punctual fulfilment of the duties incumbent upon

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me as a Christian, a citizen, a parent, to the enjoyment of all the pleasures which may so easily lead me astray from those obligations, or at least render me cold and indifferent towards them. But why should we so eagerly pursue frivolous amusements, when, even in the days of winter, far purer pleasures are within our reach? If we have any taste for the contemplation of the works of God in the kingdoms of Nature, the star-bespangled heavens, the snow-covered fields, and a thousand other phenomena of winter, may serve at once to augment our pleasures and to strengthen our piety. For in winter also great are the works of the Lord; he who loves to meditate upon them, shall enjoy delight ever varying and ever new.

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JANUARY 6.

GOD'S PROVIDENTIAL CARE OF THE ANIMAL CREATION DURING WINTER.

THE many millions of rational beings dispersed over the face of the earth, are provided, at this season of the year, with every thing necessary to supply their wants. These wise and beneficent arrangements of the Creator for our preservation, are so much the more worthy of being contemplated and admired, the greater is the number of mankind, the more their wants are varied according to their condition, their age, and their manner of life, and the more incapable we are of taking the necessary precautions for our own safety. But we should betray great selfishness, were we to confine the goodness and wisdom of God to the preservation of the human race alone, without reflecting on the care which the far more numerous tribes of thousands of other animals enjoy in winter. However wonderful the preservation of the human species may be, we can yet assert with truth, that the providence which God manifests with respect to other animals, affords still more astonishing proofs of his wisdom, of his omnipotence, and of his goodness.

That the innumerable multitue of animals should find in summer both dwelling-places and subsistence, is not so surprizing, as all nature is then disposed to contribute toward this end; but that in the present season these millions of quadrupeds, reptiles, birds, insects, and fishes should continue to exist, is a circumstance which must excite astonishment in every reflecting mind. To the greatest part of animals nature has given such a covering, that they can easily withstand the

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cold, and thus procure their food both in summer and winter. The bodies of all wild animals which inhabit deserts and forests are so constituted that their hair falls off in summer, and is renewed towards winter with a much thicker fur, which enables them to endure the most intense cold. Other species of animals find an asylum in the bark of trees, in old walls, in the clefts of rocks, and the caverns of mountains, when the increasing severity of the weather obliges them to quit their summer-habitations. Into these retreats they either carry their provision before-hand, or they are nourished by the fat which they have amassed during the summer, or pass the winter in a profound sleep. To many kinds of birds Nature has given an instinct which causes them to leave us in vast flocks at the approach of winter, and to repair to warmer climes. Many animals that are not destined to travel, obtain in winter but a scanty subsistence. Hence we see storks, swans, geese, and other birds assemble in autumn in large flocks, and proceed, in regular columns, toward the south, where they find temperate weather and abundant nourishment. Birds know how to discover insects among the moss, and in the crevices in the bark of trees. Various kinds of quadrupeds carry a stock of grain into their holes in summer, for their winter maintenance. Other animals are obliged with great labor to seek their food under the snow and ice. Many of the brute inhabitants of the northern regions prepare for themselves a subterraneous habitation. The birds and fishes that are frozen up among the ice in the morasses and rivers, live the whole winter without nourishment. Here they subsist upon the fat they have accumulated in summer, and in a perfectly

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torpid state, while the circulation of the blood and respiration are almost suspended, they await the vivifying influence of the sun.

O Christian! adore with me our beneficent and almighty Preserver! Notwithstanding his greatness and majesty, such is his goodness that he doth not forget the meanest creature under heaven. Every animal, from the elephant to the mite, owes to him its habitation, its nourishment, and its life. And where Nature herself seems barren, he finds ample means of supplying all deficiencies. Let this consideration strengthen thy confidence in God. O thou of little faith, canst thou give way to care, anxiety, and apprehension? Canst thou despair of the needful support in the days of winter? That God who nourishes the beasts of the field will not abandon man. He who is great in little things, will he not be infinitely greater in those which are of importance? That God who furnishes the animals with a covering for the winter, will also clothe thee. That God who assigns them a habitation in the caverns of the mountains, will also teach thee to find an asylum where thou mayest live in peace. That God who has prepared nourishment for them, even under snow and ice, will also provide for thee a subsistence in the most critical times.*

* That passage of the sacred writings from which these sentiments are evidently taken, has been thus clothed in poetic language by Thomson:

Think not, when all your scanty stores afford,
Is spread at once upon the sparing board;
Think not, when worn thy homely robe appears,
While on the roof the howling tempest bears;

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God's care of animals in winter.

Finally, O Christian, let this consideration encourage thee to imitate the divine providence and goodness as far as thou art able, and to contribute to the preservation and comfort of thy fellow-creatures. To treat animals with cruelty, to deny them nourishment, and such conveniencies as are the most necessary for them, is certainly acting in opposition to the will of the Almighty Creator, whose generous care is extended also to them. And if the brute creation have a just claim to thy love, how much stronger must be the duty of alleviating, as much as possible, the distresses of thy fellow-

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What farther shall this feeble life sustain,
And what shall clothe these shiv'ring limbs again.
Say, does not life its nourishment exceed?
And the fair body its investing weed?
Behold, and look away your low despair—
See the light tenants of the barren air:
To them nor stores nor granaries belong,
Nought but the woodland and the pleasing song;
Yet your kind heavenly father bends his eye
On the least wing that flits along the sky.
To him they sing when spring renews the plain,
To him they cry in winter's pinching reign;
Nor is their music nor their plaint in vain:
He hears the gay and the distressful call,
And with unsparing bounty fills them all.
Observe the rising lily's snowy grace;
Observe the various vegetable race;
They neither toil nor spin, but careless grow,
Yet see how warm they blush, how bright they glow!
What regal vestments can with them compare?
What king so shining, or what queen so fair?
If ceaseless thus the fowls of heaven he feeds,
If o'er the fields such lucid robes he spreads,
Will he not care for you, ye faithless, say?
Is he unwise? or are ye less than they?

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men! Be not content to be thyself above the reach of want, but let others participate with thee in the blessings of this life, nor suffer any one to perish through lack of that support which it is in thy power to afford.

JANUARY 7.

THE BEAUTIES OF WINTER.

EVERY season has pleasures and beauties peculiar to itself. Even the winter, however cheerless and destitute of charms it may appear to a great portion of mankind, fulfils in this respect also the design of the Creator. For the sake of those who so often murmur, through ignorance and prejudice, at the beneficent arrangement of this season, I shall now describe what pleasure, not only the heart, but likewise the senses may enjoy during the winter.

Is it not a delightful spectacle to behold Aurora dawning over a landscape covered with snow? The thick fog which rested upon the earth and obstructed the view, is suddenly dissipated. All the bushes are powdered with a delicate hoar-frost; the sun sheds his beams, tinged with a thousand colors, over hill and valley, and gives new life to every creature. His benign influence invites the diminutive titmouse to leave the thicket, and animates the sparrow to fly abroad in quest of sustenance. As dead as Nature appeared during the absence of the sun, so animated is she now, and in her hoary garments delights the eye of the wanderer.

Have you ever considered with attention the figure of the snow? Have you ever reflected on

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the wonders which the formation of a single flake of this substance exhibits? Observe only the exact symmetry of its shape, and the infinite number of flakes which fall from the air. What a pleasing sight it is to behold the hills, the woods, the fields, suddenly clothed in a garment of such brilliant whiteness! How charming is the confusion in which all these objects are blended! Look, for the eye can never be cloyed, however it may be accustomed to this agreeable spectacle,—look at the splendid dress of those hedges! See, how the woods bend beneath their glistening burden! The whole is one vast uniform, white desart.

What idea shall I form of you, who, at the sight of such transformations, either feel nothing, or, however, do not experience that pleasure which the Creator designed to afford you? And as for you who in this season do nothing but murmur against the laws of Nature, how much are you to be pitied! If ye have no relish for the charms of Nature in winter, I fear that spring itself, with all its beauties, will find you equally insensible. Come, my friends, taste and see how gracious the Lord is in this season, how adorable is his wisdom, how unbounded his goodness in every thing which relates to winter. Nature, however desolate she may now appear, is nevertheless a divine master-piece. It is our blindness alone which hides her beauties from us. Some rays of the divine wisdom shine forth from every portion of Nature; but how many more are concealed from our view! We see her not in all her ways, but only catch a glimpse of her when she approaches our senses and our feelings. And even in this many resemble the irrational animal, who beholds the sun, the snow, and the other

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phenomena of Nature, without ascending to that God, from whom proceed all things, both in heaven and upon earth.

With what satisfaction your souls shall be filled, if you accustom yourselves to consider attentively the works of God in winter. The air may then be agitated around you, the heavens may be blackened with storms, and all Nature appear desolate, but yet your souls may derive true pleasure from seeking, in all things, the wisdom, power, and goodness of our great Creator. Be the faculties of your understanding ever so limited, still you will find sufficient matter to interest your senses and your imagination. You will have no occasion to seek pleasure, with so much trouble, in the circles of dissipation, or at the gaming-table; but in your lonely closet, or in the converse with your children and friends, you will daily find new and genuine delight.

Accustom thyself, O my soul, to aspire to these delights! Meditate often on the works of God, and by this contemplation smooth the asperities of life. Ascend, by the ladder of the creation, to God, and in all the changes of the seasons let him be the object of thy praise.

JANUARY 8.

EVERGREENS.

THE earth may now be compared to a mother whose fairest and most promising children have been torn from her bosom. She is now desolate, and bereft of those pleasing objects which once gave her surface such variegated charms. Most of

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the vegetables, like some of the animal creation, now become perfectly torpid. Their leaves wither and fall, as the sap no longer continues to ascend, for otherwise it would burst the vessels contracted by the cold. Nevertheless, she is not deprived of all her children: here and there we discover vegetables which seem to defy the rigors of winter. The abundance of resinous matter with which these are provided, prevents the sap from being chilled, and by the narrow and pointed leaves they are secured from injury from the weight of the snow. Such are our firs and pines, and the other evergreens of that class. Here the holly displays its scarlet berries; there the laurustinus presents its charming bushes, and both are covered with foliage that never fades. The yew towers aloft, proud of its verdant clothing. The feeble ivy still creeps upon the walls, and remains unshaken while tempests roar around. The laurel extends its green branches, and appears just as lively as in the midst of summer, while the humble box here and there peers above the snow. These and other vegetables, clothed in their native verdure, retain their beauty in the coldest season and in the most inclement climes.

Durable, like these, are the advantages of a cultivated understanding and of a benevolent disposition. Splendor of dress, which dazzles none but the vulgar, soon becomes contemptible. The tints of youth and health that glow upon the cheek, fade, and all exterior beauties captivate only for a moment; but virtue has charms which survive the decay of every inferior grace. This is the happy lot of the man who fears the Lord. He flourishes like a tree planted by the side of a river; he grows, and his branches occupy an extensive space. He

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brings forth fruit in due season; his leaves never wither; he comforts those who seek the shade, and the traveller blesses him.

How amiable is the picture of a pious man! He borrows not his beauty from the external and accidental gifts of fortune, but his real ornaments are within. He may be shaken, at times, by the tempests of adversity, but they can never bow him down; he raises his head far above the reach of storms. Though misfortunes may reduce him to poverty, still he is rich, because he possesses the approbation of God and a good conscience, and he is yet richer in the hope of immortal bliss. While those who, priding themselves on their beauty, their rank and their wealth, rebelled against God, are falling around him, he remains in his enviable lowliness, secure against every contingency; for the Lord holds him by his right hand.

These reflections lead me to the idea of a venerable old man, who, in the winter of his life, resembles those plants which, during this season of the year, still preserve their verdure. How many storms of the passions has he resolutely braved, how many charming objects has he seen decay around him! He still lives, while most of those who came into the world at the same time with him have been snatched away. He still exhibits some pleasing vestiges of youthful vivacity. However wrinkled his brow may appear, and however feeble his body, he is still adorned with those virtues which compensate for the loss of external advantages. He still blooms in his children; his wisdom, his integrity, and his tried experience serve for an example and for instruction to his remote posterity.

O that the winter of my life may also have as

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many charms! May I, when stripped of all the attractions of youth and of manhood, in which I now pride myself so much, flourish in my old age like a fruitful tree, and by my virtues inspire veneration and love! In a short time all my personal beauty shall fade like the flowers of summer: happy, if I shall then have no cause to regret its loss—happy if I shall then be adorned with those attractions which spring from wisdom and virtue, and which the grave itself shall not be able to impair!

JANUARY 9.

REMARKABLE STATE OF MAN DURING SLEEP.

To make ourselves acquainted with the greatness of the divine power and wisdom, we need not to have recourse to extraordinary events. The most common incidents that occur in nature, or take place in the human body, are of themselves capable of affording the most convincing proofs, that a Being infinitely wise, powerful, and beneficent, created the world, and presides over the universe. From that vast number of miracles of which God is the author, I will now, my dear reader, introduce one, which, though it daily occurs, is not, on that account, the less worthy of your notice and admiration.

Often as you have been refreshed by sleep, this is perhaps the first time that you have been led to reflect on this state; or, at least, that you have considered it as one of the wonders of divine goodness. You may think that nothing extraordinary happens when you are overtaken by sleep: you

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may imagine that the structure of your body is adapted to that state, and that an inclination to sleep proceeds from causes purely natural. But perhaps this phenomenon may be considered in two points of view. On the one hand, nothing is found in sleep but what necessarily results from the nature of man; and, on the other, there is something so extraordinary and so wonderful in this natural effect, that it is worth while to examine it more minutely.

It is, in the first place, a proof of the wisdom of God that we fall asleep imperceptibly to ourselves. Endeavour to discover in what manner sleep steals upon you. That very attention will prevent its approach, nor can you fall asleep till the power of thought is suspended. Sleep comes unbidden; it is the only change in our state in which reflection has no part; for the more we strive to procure it, the less successful we are.* Thus God has rendered sleep an agreeable necessity to man; and has made it independent both of his reason and of his will. Pursue these reflections still farther, and consider the wonderful state in which you exist during sleep. You live without knowing, without being sensible of it. The pulsation of the heart, the circulation of the blood, the digestion of the aliments, the secretion of the various juices, in a word, all the animal functions are continued without interruption or derangement. The soul is reduced to a temporary inactivity, and gradually loses all distinct

* The beautiful soliloquy on sleep which our great dramatic poet has put into the mouth of King Henry IV. cannot fail to occur to the memory of every English reader. T.

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ideas and sensations. The senses become languid, and cease to perform their respective functions. The muscles by degrees move more slowly, till, at length, all voluntary motion is suspended. This change commences in the forehead; then the muscles of the eye-lids, neck, arms, and legs gradually abate in their activity, so that, at last, the man seems transformed into a plant. The state of the brain is such, that it cannot convey ideas to the soul, as it does when we are awake. The soul, in sleep, is blind to every object, though the optic nerve is unimpaired, and the eyes remain wide open. The ears also continue open, and yet hear nothing. In a word, the state of a person asleep is in every respect wonderful; and perhaps there is only one other state to which man can be reduced, that is equally remarkable, and of which sleep is evidently the image.

The state I mean is that of death. As sleep and death border closely on each other, so similar changes take place in both. Who can think of sleep, without, at the same time, representing to himself the image of death? As imperceptibly as you now fall asleep, shall you one day fall into the slumber of death. Death, it is true, often announces his coming many hours or days beforehand; but the very moment in which the sleep of death shall overtake you, shall arrive suddenly, and when you appear to feel his stroke, your mortal existence is at an end. The senses, whose functions are suspended during sleep, are equally incapable of acting in death. The perceptions of the soul become more and more confused; we forget every thing about us, nay, we even forget ourselves. Perhaps the moment of death may be as pleasant as

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the moment in which we fall asleep. The convulsions of the dying are no more productive of disagreeable sensations, than the grinding of the teeth and snoring occasion to the slumberer.

Let these reflections often be present to your minds. Whenever you retire to rest, think of the wonders and benefits of sleep, and bless your preserver, who, even in slumber, does such great things for us. Yes, great things, indeed! Were not his protecting hand over you, how many miserable nights might you have passed! Had not God regulated and directed the pulsation of your heart, the circulation of the blood, and the motion of the muscles, the first sleep after your birth would have consigned you to the arms of death. Had he not granted you the refreshing influence of sleep, you would long since have perished from fatigue. Reflect seriously on this subject, then will your own heart enforce the duty you owe to so great a benefactor, and you will, with joy, return thanks to the Lord, who proves himself under all the circumstances of life to be your God.

JANUARY 10.

ADVANTAGES OF THE CLIMATE IN WHICH WE LIVE.

O MY brethren! let us be truly sensible how happy we are in every respect! The blessings of our heavenly father are showered upon us from every side. The aspect of our forests, our fields and our hills; the pure and temperate air which surrounds us; day and night; the seasons of the year, and the variations which attend them, all announce the distinguished favour of God, and the

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extent of our happiness. And shall we still be dissatisfied with our lot? Shall we complain that the Almighty has not dealt his blessings with a more liberal hand, and murmur because a perpetual summer does not smile upon us, because we are not cheered by constant sun-shine, and because an equal temperature is not always diffused through our zone?

What ignorance and what ingratitude! Truly we know not what we desire, or of what we complain. Is it inadvertence or pride that renders us blind to the goodness of God, which is so particularly displayed in our climate? We often murmur at the severity of winter, and are so silly as to wish we lived in those countries where the vicissitudes of the seasons are unknown. But it is the winter that renders the region we inhabit one of the most healthy. Hot climates are much more exposed to infectious diseases than those which have a more moderate temperature; and human life is rarely so prolonged in those countries as in ours. It has, moreover, been remarked, that the inhabitants of the torrid climes are not so strong and robust as we, and that for this reason they seldom have such a numerous progeny.

Let the cold in winter be ever so violent in our climates, are we not still more happy than the inhabitants of those countries where it is far keener, and of longer duration, and with whom the utmost rigors of our winter would pass for the temperature of autumn? Compare only in idea your lot with the condition of those people who inhabit the northernmost parts of the globe. Here transient gleams of sun-shine enliven the gloomy days that are sometimes enveloped in fogs, and give us new anima

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tion. There the days resemble nights, and are not cheered by a single ray of the beneficent luminary. Here, in peace and security, we may defy the wintry cold, beside the blazing fire or in the comfortable bed. There, they are disturbed by ferocious beasts, more formidable than the cold itself, and their habitations are not capable of protecting them against either of these enemies. Among us, the pleasures of society mitigate the inconveniencies of winter; but those unhappy mortals who dwell within the polar circle, are separated, as it were, from the rest of mankind, and live in detached hordes. We have the happiness of witnessing the succession of day and night; but they pass the greatest part of their lives in darkness and twilight. We also possess the most essential advantage, that after four or five tempestuous and disagreeable months, we enter on a season, the charms of which efface the impression of all we have suffered. They, on the contrary, can only contemplate Nature in a state of constant death, without ever beholding her revival. Eternal winter is their portion.

O let us, my brethren, bless the beneficent hand that has assigned us so happy a lot! Instead of murmuring at our condition, let us praise the Lord, who has regulated it with so much wisdom and goodness. While we are spending the days of winter agreeably in our houses, or in the society of select friends, let us think of that distant portion of our fellow-creatures who are deprived of those pleasures which we possess in such abundance as to makes us forget their value. And when we, in these days, contemplate the face of Nature in our climates, let us with grateful hearts thus address

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our maker: "O my God! I thank thee for having fixed my abode in this temperate clime, where thy goodness is manifested in every season with such magnificence. The more thou hast favored me beyond other people, so much the more thankful, virtuous, and contented may I be; so much the more powerfully may the fertility and charms of Nature excite me to acknowledge thy blessings. And,—O transporting thought!—one day, my Father, I shall enter those regions of perfect bliss and joy which Jesus Christ has prepared for me, where, with all the nations of the earth, I shall adore the wonders of thy infinite mercy."

JANUARY 11.

FERTILITY COMMUNICATED TO THE EARTH BY SNOW.

To judge from appearances snow, would seem to be of no particular utility to the earth, and we should rather be led to imagine that the cold humidity which it imparts to the ground might be prejudicial to the trees and other vegetable productions; but the experience of ages serves to correct this prejudice. Snow is the best covering that Nature could possibly have given to corn, plants, and trees, to protect them from the injurious effects of frost. Although cold in itself, it shelters the earth from piercing winds; maintains in its bosom the warmth that is necessary for the germination of seeds; and contributes to dilate them by the nitrous particles with which it is impregnated.*

* Amid the multiplicity of subjects in every department of Nature, of which the author has treated in this work, it

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Thus, even in this season, God employs expedients for the preservation of the beings he has created, and provides beforehand for our nourishment and that of an innumerable multitude of other creatures. Nature is ever active, even when she appears to be at rest, and confers important benefits at the very moment when she seems to withhold them. Let us also in this dispensation admire the loving kindness of our God!

Behold how Providence is employed, even in the most inclement season, to promote our welfare; how, without requiring our assistance, it is continually labouring for us, and secretly converting

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cannot be surprizing if he has occasionally fallen into mistakes. Of this we have an instance in these reflections on snow. It has been a vulgar opinion very generally adopted, that snow fertilizes the earth more than rain, in consequence of the nitrous salts which it is supposed to acquire in freezing. It appears, however, from the experiments of Margraaf, that neither of them contains any kind of salt, or earth, in such quantity as to be sensibly efficacious in promoting vegetation. By distilling as much of the purest snow as yielded 3600 ounces of water, that chemist obtained 60 grains, not of nitre, but of calcareous earth, with some grains of muriatic acid, impregnated with a nitrous vapor. The same quantity of rain-water yielded 100 grains of calcareous earth, with some grains of nitrous and muriatic acids, so that the chemical difference between them is extremely small. Allowing, therefore, that nitre is a fertilizer, which many are on just grounds disposed to deny, yet so very small is the quantity contained in snow, that it cannot be supposed to promote vegetation. The beneficial influence of that substance must principally consist in its furnishing a covering to the roots of vegetables, by which they are protected from the severity of the atmospheric cold, and the internal warmth of the earth is prevented from escaping. T.

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Fertility communicated to the earth by snow.

the riches of Nature to our advantage. With such striking manifestations of the beneficent care of the Almighty, who would harbor in his soul distrust or anxiety? The same plan which God follows in winter with respect to Nature, he observes daily in regard to the preservation of mankind. What to us appears useless or detrimental, contributes, in the end, to our felicity. And at the very moment when we may imagine that God does not concern himself about our welfare, he is secretly forming plans to rescue us from this or the other affliction, and to procure us blessings for which we could not have hoped. How often are we agreeably deceived in our expectations! When adversity approaches, we think ourselves irretrievably lost. The issue, however, proves, that the calamity which befel us was destined, according to the wise dispensations of the Almighty, to contribute to our real comfort and happiness.

God has not covered the earth with snow merely for the purpose of preserving its warmth, but also to fertilize it. How much labor is required to give the land the necessary quantity of manure! And how easy is it for Nature to accomplish this end! Snow possesses a virtue which is far more efficacious than rain or any other manure. When dissolved by the sun, or a milder temperature of the air, the nitre which it contains penetrates the earth to a considerable depth, and impregnates the vessels of the plants with life and fertility. Who can help recollecting the emblem under which God has represented the salutary effects of his word? "As the rain cometh down and the snow from heaven, and returneth not thither again, but watereth the earth, and causeth it to bring forth and bud; so

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shall the word be that goeth out of my mouth; it shall not return unto me void, but shall accomplish that which I please, and prosper in the thing whereunto I sent it." Isaiah lv. 10, 11. We live in a time when this prediction is accomplished in a most striking manner. Whole provinces and kingdoms, nay, whole divisions of the globe, formerly enveloped in the night of superstition, are now illumined by the radiance of the gospel. And what blessed efficacy still accompanies the word of the living God! How many hearts, hardened against all remonstrances, have been rouzed by it to their own salvation! How many fruits of righteousness has it produced! O may our hearts always prove a good soil, and be not less disposed to receive the influences of divine grace, than the earth to imbibe fertility from the snow!

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JANUARY 12.

CONTEMPLATIONS ON THE STARRY HEAVENS.

THE firmament exhibits, at night, a scene of wonders which cannot fail to excite astonishment in every reflecting observer of Nature. But why are there so few who attentively consider the star-bespangled heavens? I am willing to believe that in the majority ignorance is the cause of this inattention; for it is impossible to be convinced of the grandeur of the works of God, and not be lost in admiration of the majesty of the Most High, and not feel a rapture approaching to heavenly extacy. Would to God that I could kindle this divine rapture in your bosoms! To this end raise your thoughts to the firmament. In order to fill your hearts with

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astonishment at the majesty of the Almighty, I need only name to you those immense bodies scattered through the vault of heaven.

Enthroned in the centre of the universe is the Sun, whose orb is more than a million times larger than the earth, and is distant from it above ninety millions of miles. Notwithstanding this prodigious distance, how powerful is the influence he exercises on our sphere. Seven globes, which are denominated planets, move round the sun; these are opaque bodies, which receive light, heat, and perhaps also internal motion from the influence of the sun. Georgium Sidus, or Herschell, Saturn, Jupiter, Mars, the Earth, Venus, and Mercury, are the names of the seven primary planets. Of these Mercury is the nearest to the sun, and is, therefore, in general, invisible to the astronomer. Being considerably smaller than our earth, he gives to the firmament no extraordinary brilliancy. Next comes Venus, which is sometimes called the morning, and sometimes the evening-star. This planet is one of the most luminous of the heavenly bodies, whether she precedes the rising of the sun, or succeeds his setting. Next follows our Earth, round which the moon revolves as a satellite. Mars is the fourth planet. Jupiter, with his belts, is always distinguished in the studded vault of heaven by his superior splendor. His apparent magnitude exceeds that of all the fixed stars. He is nearly equal to Venus when she is in full lustre, but his light is not so vivid as the light of that planet. How small is the earth in comparison to Jupiter! One hundred and fifty-eight globes as large as our earth would scarcely contain as much matter as Jupiter. Saturn is removed to a still greater distance from the sun

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than Jupiter, and is about eighty times as large as the earth. Lastly, the Georgium Sidus, or, as it is called from its discoverer, Herschell, forms the present boundary of our planetary system.*

* Since the decease of the pious author of these Reflections, many important discoveries have been made in the science of astronomy. It is somewhat remarkable that he should have omitted to notice, in his account of the planets, the Georgium Sidus, the existence of which was known some years previous to that event. This deficiency, as will be seen above, the translator has supplied.

Since the commencement of the present century three new planets have been added to the catalogue. Ceres Ferdinandea, a very small planet, was discovered on the 1st of January, 1801, by M. Piazzi, an Italian astronomer; and Pallas, a still smaller body, was first observed by Dr. Olbers, of Bremen, on the 28th of March in the following year. The third, which received the appellation of Juno, was discovered on the 1st of September, 1804, by M. Harding, of Lilienthal, near Bremen.

The annexed table will exhibit a more complete and perspicuous view of the solar system, with the various relations of the orbs which compose it.

	Mean diameters in English miles.	Mean distances from the sun in round numbers of miles.	Time of rotation round their own axis.	Time of revolving round the sun.
			D. H. M.	D. H. M.
The Sun	883,216	—	25 14 8	—
Mercury	3,224	37,000,000	unkn.	83 23 16
Venus	7,867	68,000,000	0 23 21	224 16 49
The Earth	7,912	95,000,000	1 0 0	365 6 9
The Moon	2,180	95,000,000	29 17 44	—
Mars	4,189	144,000,000	0 24 39	686 23 30
Ceres	160	250,000,000	unkn.	unknown
Pallas	110	270,000,000	unkn.	1,703 16 48
Juno	unkn.	300,000,000	unkn.	unknown
Jupiter	89,170	490,000,000	0 9 55	4,332 14 27
Saturn	79,042	900,000,000	0 10 16	10,759 1 51
Georgium Sidus	35,112	1,800,000,000	unkn.	30,737 18 6

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This sun, with all the planets which accompany him, form, however, but a very small portion of the vast universe. Every star, though apparently no larger than a brilliant in a ring, is, in reality, an immense body, equal to the sun in splendor and dimensions. Thus each star is not only a world, but the centre of a magnificent system, surrounded by many others. 'Tis in this light that we ought to consider the stars which glisten above our heads in the cold nights of winter. They are distinguished from the planets by their stronger light, and by always occupying the same position in the firmament. According to their apparent dimensions, they are divided into stars of the first to the sixth magnitude; and these six classes comprize about three thousand. But though men have in some measure determined their number, it is, nevertheless, certain that they are innumerable.* The multitude of stars scattered over the face of heaven, which the strongest sight is scarcely able to discover, baffles every attempt at calculation. Telescopes, indeed, have opened to us a more extensive view of the creation; but it would be the height of folly in man, to suppose that the limits of his telescope were the limits of the universe.

If we reflect on the prodigious distance of the fixed stars from our earth, we shall find new reason to admire the immensity of the creation. Our senses alone teach us that the fixed stars must be at a greater distance than the planets. To their distance it

*The *History of the Heavens*, by the late celebrated French astronomer, Lalandé, contains a catalogue of fifty thousand stars. T.

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is owing that they appear to be so small, indeed, points scarcely perceptible. This distance is truly inconceivable, for a cannon-ball, supposing it to preserve all the time its original velocity, would scarcely reach the nearest fixed star in six hundred thousand years! What then are the stars? Their prodigious distance and their splendor resolve this question. They are suns, which pour down upon us, from their remote situations, not a borrowed light, but a light which is essentially their own—suns which the Creator has scattered by millions in boundless space, and each of which is accompanied by its planets, for whose benefit it was formed.

But all these observations, however surprizing they may appear, scarcely lead us to the threshold of created objects. Could we soar above the moon, and approach the planets, could we reach the most elevated of the celestial bodies that glisten over our heads, we should discover new heavens, new suns, new stars, new systems, and perhaps infinitely more magnificent. Nor would the empire of our great Creator terminate there; but we should perceive with astonishment that we had only arrived on the frontiers of the universe. Little as we know of these works of the Almighty, still it is sufficient to direct our attention to the infinite wisdom, power, and goodness of our adorable Creator.

Pause then, reader, and reflect. How great must be that God who formed all these immense spheres; who regulates their course, and upholds them by his mighty arm! And what is this speck of earth, with all its splendid scenes, in comparison to the magnificence of the firmament! Were it even annihilated, it would no more be missed, than a grain of sand on the sea shore. What are

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provinces and kingdoms compared to those worlds? Nothing but atoms that float in the air, or sport in the rays of the noon-tide sun. And what am I, when I reckon myself among the infinite number of the creatures of God? How am I lost in my own insignificance! But so little as I feel myself in this particular, so great am I in another respect. How beauteous is the star-bespangled firmament, which God has chosen for his throne! Yet the heavens, with their countless worlds, are not endued with those intellectual faculties, with the precious gift of reason which he has conferred on me, the clay of his hand.

I can contemplate the beauty, the wonders of those splendid spheres: nay, what is more, I can obtain a glimpse of God their creator. I will therefore pursue this study; I will strive to make myself still better acquainted with God and with his works; nor will I relax in this occupation, till I shall be elevated above all planets, suns, and stars.

JANUARY 13.

DISCOVERIES MADE BY MEANS OF THE MICROSCOPE.

NATURE is the same in the smallest objects as in those of the greatest magnitude, and displays as much order and harmony in the structure of the elephant as in the production of the mite. The only difference consists in this, that the weakness of our sight prevents us from penetrating into the nature and organization of the most diminutive bodies, and that many things, concealed from the naked eye, cannot be discovered but by other means. The microscope exhibits to us a new world,

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both of vegetables and animals;* it shews us that even such bodies as are invisible to the naked eye must be composed of various parts, and have extension and a peculiar figure. Let us now, for the glorification of the Creator, produce some examples of his wonders on a small scale.

Every grain of sand appears round, when examined with the naked eye; but by the aid of a microscope we can discover that each differs from the others both in figure and in size. One is perfectly spherical, another square, a third conical; but the greatest number are of an irregular figure. The most astonishing circumstance is, that, by the aid of a glass which magnifies a million times, we discover in a grain of sand a new world of insects; for the cavities are found to be the dwelling places of those creatures. A species of diminutive animals,

* The miscroscope was invented, towards the conclusion of the sixteenth century, by Zacharias Jansen, a spectacle maker, of Middelburg, in the Netherlands, to whom the discovery of the telescope is also attributed. These two instruments are formed exactly on the same principles. The history of their origin shews to what trifling causes mankind are indebted for some of the most ingenious inventions. It is said, that some of Jansen's children playing in his shop with spectacle-glasses, perceived that when they held two of them, one of which happened to be convex and the other concave, at a certain distance from each other, the dial of the clock appeared greatly magnified, but in an inverted position. From this circumstance the father adopted the idea of adjusting two of these glasses on a board, so as to move them at pleasure; and his first rude essays were afterwards improved into the instrument called the telescope, which has led to as many extraordinary discoveries in the sublime science of astronomy, as have been made by means of the microscope in the more humble terrestrial productions of Nature. T.

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called mites, is found in cheese. To the naked eye they appear like specks; but the microscope proves that they are insects of a very singular figure. They have not only eyes, mouth, and legs, but also transparent bodies, provided with long hair, like bristles.—In the vegetable kingdom, the mould which generally collects on damp bodies, exhibits the resemblance of a thick forest of trees and plants. The branches, leaves, blossom, and fruit may be clearly distinguished. The flowers have long, white, transparent stems: before they open, they appear like small, green buds, which become white when they are blown. As little as we should have expected to discover this in mould, so little should we imagine that the dust which covers the wings of the butterfly, is a collection of small feathers, had not the microscope convinced us that this is the case. But, reader, you have no occasion to extend your researches to remote objects. Go no farther than yourself. Observe the surface of your skin through a microscope; it resembles the scaly armour of a fish. It has been calculated that one single grain of sand can cover two hundred and fifty of these scales, that one scale covers five hundred pores, and that consequently a space equivalent to a grain of sand contains one hundred and twenty-five thousand pores.

Thus you see how great your Creator is, even in those things which prejudice has taught us to consider as trifles, and how innumerable are the creatures which he has distributed over the earth. What you behold is the smallest, and perhaps only the meanest of the works of God. How many objects in Nature are wholly concealed from our senses. We are already acquainted with more than thirty

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thousand different plants, and several thousand species of insects:* but all these are nothing in comparison of the whole. Were the bottom of the sea and the beds of rivers uncovered to our view; could we transport ourselves to other planets, how would our astonishment at the immense number of the creatures of God be increased! And this could not fail to appear to us the most wonderful of all, that God should have employed as much wisdom in the production of the smallest, as he has manifested in the greatest of his works. Nature is as regular and as exact in diminutive objects, as in those immense bodies, the circumference of which we are obliged to calculate by millions of miles. The Creator extends the same beneficent care to the worm that creeps in the dust, as to the whale which towers above the waves. Strive, O reader, to imitate him in this respect. The meanest of created beings deserves thy kindness, as our common Author does not disdain to preserve its existence.

JANUARY 14.

BENEFITS OF THE NIGHT.

We are deprived, it is true, of some pleasures, now that the sun daily withdraws his light so early

* A distinguished naturalist at Paris some years ago announced that he possessed a collection of more than thirty thousand species of animals. A modern botanist boasted of having collected twenty-five thousand plants, and estimated those which he had not seen at four or five times that number. (*St. Pierre's Studies of Nature.*) T.

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from us, and we are obliged to pass so many hours in night and darkness. Nevertheless, we have no reason to complain of this ordination of Nature. As the mixture of pleasure and pain, of good and evil is wisely regulated, so also the wisdom and goodness of our Creator are displayed in this remarkable change which occurs in our climate. It may, with just reason, be asserted, that the nights of winter are more advantageous than injurious to man; or, at least, that their apparent inconveniencies are compensated by many blessings which we are apt to overlook.

Should we acknowledge with such thorough conviction and such sincere pleasure the value of daylight and the utility of the sun, had we not been led to estimate its worth by the privation of its advantages? Each night may remind us of the goodness of God, who, for the comfort of man, has diffused light and beauty over the face of the earth; it may also cause us to reflect on the misery to which we should be consigned, were not day to succeed to the shades of night. And does not night confer on us an important benefit, inasmuch as it affords us silence and tranquillity, that we may enjoy refreshing slumbers? How many laborers are there, who, during the day, exhaust their strength in our service, and frequently in such employments as are rendered still more unpleasant by the disagreeable sensations with which they are accompanied! These bless the night which brings them rest from their labors, and invigorating repose. We must be extremely selfish if we estimate the utility of the night only by the advantages or inconveniencies that we suppose we ourselves derive from it. If the night be disagreeable to thee, O man, how

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many of thy fellow-creatures are there to whom it is a blessing? Is it not favorable in many cases to the pursuits of the hunter and the fisherman? With continual day, could astronomers have acquired a knowledge of the distance, the magnitude, the revolutions, and prodigious number of the stars and planets? Or would the compass render such essential service to the mariner?*

Night, in my opinion, is highly beneficial to mankind in another point of view. It diminishes all our wants, and suspends the necessity of those pursuits to which we are obliged to attend during the day, and often with a great waste of our time, strength, and fortune. How expensive are the conveniencies and the comforts of life, without which we should think that we but half enjoyed life! How many families, pressed by want, begin the day in anxious uncertainty respecting their subsistence! To live comfortably, the day is spent in unremitted labor and care. Night arrives, and suspends all these toils and troubles. To be comfortable and happy we then want nothing but a bed; and if, on retiring to it, refreshing sleep closes our eye-lids, all our wants are satisfied at once. Night places the beggar, in some respects, on a level with the monarch; both enjoying, without the least expense, a blessing which no money can procure.

* I know not in what light this concluding reflection may appear to the generality of readers, but to me it seems not much less preposterous than if the author had lamented that continual day would have deprived man of the comforts of candle-light, or a whole limb of the conveniencies of a wooden leg. T.

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Benefits of the night.

How gracious is that Being, whose every dispensation tends to promote the felicity of his creatures! Most of the evils and inconveniencies which we experience in life, are actually such to those only who are guided by their prejudices or their passions; for when we view them in a proper light, we shall find that they are real advantages to the world. Believe me, reader, many millions of your fellow-creatures who have borne the heat and burden of the day, engaged in hard servitude and laborious occupations; many who have groaned during the day under the yoke of the oppressor; numbers of travellers, both by sea and land, will, at the approach of night, give praise to their Creator, who created the darkness for their refreshment. Let us also praise him at the return of night. This we shall surely do, if we have usefully employed the day, and can therefore justly expect to enjoy the blessings of sleep. The shorter the days are at this season, the more value we should set on every hour, the more frugal and conscientious we should be in the distribution of our time. A night cometh in which no one can work; but even this long night will be a blessing for us, if we are permitted to rest in the grave from those labors and tribulations which we encountered for the glory of God, and the benefit of the world. How sweet, how delicious will be such a repose!

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JANUARY 15.

REFLECTIONS ON MYSELF.

It is reasonable that I should sometimes turn my attention from all other objects, and fix it on myself. Too often, while meditating on things around me, have I forgotten myself, or, at least, have not felt those emotions of gratitude and reverence, which the aspect of the starry heavens, or the rich treasures presented by the earth ought to have excited. And yet, in my whole being, I am as great a master-piece of the wisdom and power of God, as those immense bodies that roll above my head. Of the truth of this the following reflections will convey a thorough conviction.

How wonderful is the union of my soul with my body! How incomprehensible is their action on each other! I daily find that, when the rays of light are reflected from external objects, my soul forms a conception of the magnitude, figure, and color of these objects. I find that when a certain tremulous motion of the air penetrates my ears, my soul receives an idea of sounds. By these means I have a perception of a thousand changes that take place around me, and even obtain a knowledge of the thoughts of others. I find every moment that whenever my soul is desirous that my body shall move from one place to another, and do this or that, the members of my body instantly comply with the suggestions of my soul; that my arms, hands, and legs immediately set themselves in motion to execute their respective functions. All these are incontestible facts; but how these changes take place is beyond my com-

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prehension. In this reciprocal influence of the soul upon the body, and the body upon the soul, is displayed a wisdom too profound for me ever to fathom, and the result of all my researches on this subject is astonishment and admiration.

My body, separately considered, is a surprizing master-piece of the Creator. It has nothing superfluous, nothing deficient. Every member is placed in the most convenient situation, whether for service or for ornament. Could I wish for more members than belong to a perfect body? And supposing that I was obliged to dispense with one of them, or that they were transposed; that my eyes, for instance, were attached to my feet, or were situated where my ears are now placed, what inconvenience and what deformity would this occasion! The external figure and position of my members is therefore wisely regulated; but the arrangement of the internal parts is still more admirable. My body was made to answer more than one purpose, and to fulfil various functions. It was intended, in the first place, for a medium to convey to the soul, in various ways, information concerning external objects. To this end it is provided with the organs of sight, of hearing, of smelling, of taste, and of feeling. Each of these is a miracle of the divine power and wisdom. That the body may be serviceable to the soul in the perception of external objects, and in many other respects it is necessary that it should be moveable. And what a number of parts concur to accomplish this end. The bones, the joints; the ligaments, the muscles, susceptible of contraction and expansion, give my body and its members the faculty of moving in a thousand ways; but so wonderful a machine must sustain a continual loss

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by its motions, and the performance of its various functions. This loss must be repaired, if the body itself shall be preserved. Thus other parts became necessary; some to receive the aliments and preservatives; others to grind them; others to digest them, and to separate their nutritious juices; others to circulate these juices through the body, and to convey to each member the portion of which it stands in need. All these parts are actually found in my body, and so constructed that the end for which they were destined is perfectly accomplished.

I thank thee, O Lord, because thou hast so marvelously formed me. Wonderful are thy works, and my soul delights to acknowledge it. To thee be rendered praise and thanksgiving. I am a prodigy of thy power, O my Creator and Preserver. My body, formed by thy hand, and each of my senses attest thy greatness. Let me praise thee, O Most High, whenever I have occasion to make use of my body, whether I walk or take repose, whether I move or breathe. May I rejoice in being thy creature, and let my body be a temple, in which thy Spirit may continually reside!

JANUARY 16.

MISCHIEFS OCCASIONED BY EXTRAORDINARY COLD.

WHENCE comes it that we so readily perceive whatever is injurious in the operations of Nature, and even take great pains to discover it, while on the contrary, the most obvious benefits are overlooked, and so easily forgotten? Men act in this case toward God, as they are accustomed to con-

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Mischiefs occasioned by extraordinary cold.

duct themselves toward their fellow-creatures. The slightest offence, the most insignificant injury they receive from their best friend and benefactor, often efface the recollection of the most essential services. Their ingratitude and their pride represent the latter as of very little value, and magnify the former into unpardonable offences. In the present time especially we have occasion to make this remark. People now seem sensible of nothing but the effects of the cold and the evils which it may occasion; but the great advantages which the frost confers on the earth, are viewed without any emotion of gratitude. When they discover this or the other inconvenience, if they find that some parts of the great whole suffer in some degree, they believe themselves authorized to murmur against God, without reflecting that Nature, upon the whole, derives great benefit from the cold. Let us now impartially weigh the advantages and disadvantages that are to be ascribed to the frost. The result will shew how little cause we have to find fault with the wise and gracious government of the Almighty.

Intense cold, it is true, is productive of many inconveniencies and distressing circumstances. Sometimes the water is frozen to the very bottom, and the springs and wells are rendered useless. In shallow ponds and pools the fishes die; the rivers recede from their shores; the water-mills are stopped; and hence arises a general want of bread. The extraordinary cold produces a scarcity of fuel, or raises it to a most extravagant price. Vegetables sustain great injury. The winter-corn, if uncovered, is cut off, and trees and plants perish. Most of the animals die of cold and hunger; the

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health of men suffers, and their lives are exposed to various dangers.

These are some of the most striking evils which intense frost may occasion. But how many winters do we pass without experiencing any part of these injurious effects! And if here and there a few animals perish, if now and then the severity of the season causes some devastation among the productions of our fields, what are these in comparison of the benefits we derive from it! Let us be more circumspect in our judgment of the ways of God! Knowing so little of the connection of things in the world, unable to embrace in its full extent the chain of causes and effects, how is it possible for us to form a just opinion of what is useful or detrimental in Nature? It would be extremely unreasonable if some slight deviations, or the imaginary hurtfulness of certain things in Nature, were to lead us to unfavorable conclusions concerning the whole. Let us acknowledge our ignorance, my friends, and strengthen ourselves more and more in the consolatory persuasion, that there is more good than evil, more pleasure than pain in the world. And, in particular, let us well consider, that many changes which our personal interest, perhaps, causes us to consider injurious, tend to promote the general good. This way of thinking will be attended with this advantage, that we shall be tranquil in all events, and in all vicissitudes shall praise the wisdom and goodness of our Creator.

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Repose of Nature in winter.

ANUARY 17.

REPOSE OF NATURE IN WINTER.

WINTER is Nature's season of rest. In the past months she was engaged in accomplishing the designs of her Creator, and in promoting the welfare of his creatures! How rich was the spring in expanding seeds and beauteous flowers! What an abundance of fruit did the summer bring to maturity, and the autumn permit us to collect! Each month, nay, each day in the past year, brought us new pleasures and new blessings. Was there ever an instant in which Nature did not either charm our eye, delight our taste, or regale our smell? Was she not often laboring to gratify all our senses at once? Like a tender mother, she was busily employed from the morning till the evening of the year, in providing for us, her favorites, all the conveniencies, comforts, and pleasures of life. From her bosom we received food, raiment, and delight in the most generous abundance. For us the earth was clothed with grass; for us the trees were covered with blossoms, foliage, and fruit; for us the golden grain waved in the fields; for us the vine bore its refreshing clusters; for us the whole creation was so resplendent in charms, and so rich in treasures. Exhausted by her beneficent exertions, she now reposes, but only for the purpose of acquiring new strength, which she will again employ for the benefit of the world. But even during this repose which Nature enjoys in winter, she is silently active in preparing a new creation. Already the necessary arrangements are made for restoring to the earth, at the end of a few

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months, the children of which she has been deprived. The corn, which shall soon afford us nourishment, has already begun to spring; the fibres of the plants, which shall soon adorn our gardens and our meadows, already begin to be developed.

Here also, most beneficent Creator, I adore thy power and thy wisdom! The repose of Nature in winter is no less a dispensation of thy wisdom, than her activity in spring and summer. Thou hast most accurately balanced the vicissitudes to which the earth is subject, and hast distributed labor and rest in equal measure. Through thee each scene of Nature varies at such a time and in such a manner as is most conducive to the perfection of the whole. Forgive my folly, if, at any time, I have presumed to find fault with the government of the world. I am more and more convinced that all thy ordinations, how absurd soever they may sometimes have appeared to my limited understanding, are replete with wisdom and goodness. Now that I behold the earth covered with her warm mantle of snow, I will call to mind that this very circumstance is productive of benefit. Could we expect flowers and fruits, were not Nature now to enjoy repose? Could I, a few months hence, sing hymns of praise for the harvest, if thou wast not now preparing, under snow and ice, for the expected crop? Yes, it is thou, O Lord, who, in granting repose to the earth, conferrest on thy creatures a thousand blessings.

To me also, most gracious Father, thou wilt assign a period of repose—repose from my labors, cares, and tribulations. Wisely hast thou apportioned the time of my labor and recreation. I am still in the spring and summer of my life, which I

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ought to employ for the good of my brethren. Soon shall the autumn of my days arrive; and then may I resemble a prolific tree, which pours into our lap abundance of fruit! In the winter of my life, when my hair shall become grey, and I shall be full of days, may my rest be as honorable and as beneficial as the rest of Nature in winter. How happy shall I be, if my contemporaries shall say of me: "That old man labored in the summer and autumn of his life with unwearied assiduity for the benefit of mankind. His whole course has been active, useful, and beneficent. Even now, in the repose of his age, he is not idle, but endeavors by his extensive experience, to promote the happiness of his family and friends. At least, he is laboring for the world to come, of which he will shortly be an inhabitant."

Nevertheless, the repose which I promise myself here below is nothing but a preparation for new afflictions. O how do I rejoice in the contemplation of that which awaits me beyond the grave, in the bosom of eternity! There I shall enjoy delicious repose from all my fatigues, without fear of new and still more severe trials. There, the recollection of all the labors I have performed, of all the afflictions I have endured in this life, shall fill my heart with inexpressible rapture. In the confident expectation that this repose is reserved for me, I will zealously apply myself to the performance of all the duties of my station, and employ my talents and my strength to the honor of God and the good of my fellow-creatures. To this end strengthen me by thy grace, my God and my Saviour!

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JANUARY 18.

THE LAPLANDERS.

WITH a lively sense of gratitude to my Creator, and of compassion toward a portion of my fellow-creatures, to whom Nature has distributed some of her blessings with a more frugal hand, I commence this meditation. I allude to the Laplanders, and the other inhabitants of the regions situated nearest to the north pole. Compared with ours, their lot and mode of life are certainly not the most enviable. Their country is a range of mountains covered with ice and snow, which not even the summer sun is able to dissolve. Where the mountains are interrupted, dreary swamps and morasses extend for many miles. Deep snow enshrouds the hills and vallies, and inclement winter reigns during the greatest part of the year. The nights are long, and the days have but a feeble light. The inhabitants of these regions shelter themselves from the cold in tents, which they can remove from place to place. In the midst of the tent is a fireplace, inclosed with stones, and the smoke escapes by an aperture, which serves the double purpose of chimney and window. From this are suspended, by iron chains, the pots in which they dress their victuals, and melt ice for their drink. The interior of this habitation is lined with skins, which keep out the wind; and the same materials compose their beds. Such are the dwellings in which they spend the winter, living six months of the year in perpetual night, and hearing nought around

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their tents save the roaring of the winds, and the howling of wolves prowling in quest of prey.*.

How should we endure the climate and mode of life of these people! How wretched should we think ourselves if we beheld nothing around us but vast fields of ice and deserts of snow; if a continual night rendered the cold still more intense; and if, instead of commodious dwellings, we had no other shelter than portable tents, lined and covered with skins! How should we feel, were we obliged to procure our subsistence by the laborious and perilous employment of hunting; were we cut off from the pleasures afforded by the arts, and all the soothing delights of social life?—Should not these considerations direct our attention to the superior hap-

* In asserting that the Laplanders live six months of the year in perpetual night, Mr. Sturm must either have been himself egregiously mistaken, or the authority from which he derived his information was extremely incorrect. Mr. Skiöldebrand, a Swedish traveller, who, a few years since, visited their country on his way to the North Cape, gives a very different account. From the observation of the Rev. Mr. Grape, minister of the parish of Enontekis, nearly the northernmost part of Swedish Lapland, situate in the latitude of 68½ degrees, he states, that "the sun there shines perpetually forty-nine days in summer, and disappears for the same length of time in winter, when there is, however, a twilight of three or four hours, at least, besides which, these long nights are frequently illumined by the Aurora Borealis." It is a singular fact, recorded by the same writer, that since the last war between Russia and Sweden, the number of wolves has encreased in Lapland to a surprizing degree. It appears scarcely possible that the noise of the cannon should have scared them away so far from Finland, near the coast of which province lay the scene of hostilities; but such is, nevertheless, the opinion of most of the inhabitants of the country. T.

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piness which we enjoy in our climate, and which we are in general so apt to disregard? Ought they not to excite us to bless the bounty of Providence, which has exempted us from so many inconveniencies and hardships, and, on the contrary, has favored us with so many blessings and advantages? Yes, my friends, praise with me the wise providence of God! Whenever you feel the rigor of the season, give thanks to your Creator that the cold is so moderate in the land in which you dwell; and that he has provided you with so many means of protection against it. Bless the almighty arbiter of the universe for having given you, amid the devastation of winter, the cheering prospect of the delights of spring, the bare idea of which is capable of inspiring your heart with fortitude and content.

But is the inhabitant of these northern regions really so unhappy as we imagine him to be? He roves about, in trackless vallies, exposed to the inconveniencies of the most inclement weather; but his hardy body is capable of braving every kind of hardship. The Laplander is poor, and destitute of all the comforts of life: but, on the other hand, he is rich enough, for he knows no other wants than such as he can easily satisfy. He is deprived for several months of the cheering rays of the sun; but to render the darkness of his night supportable, the Aurora Borealis and the moon illumine his horizon. The snow and the ice, in which he is, as it were, entombed, do not render him miserable. Education and habit have inured him to the asperity of the climate. His hardy mode of life has taught him to brave the cold. With respect to those wants which require particular resources, he has experienced the kind assistance of Nature.

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The Laplanders.

She has sent him animals, whose furs protect him from the cold; she has given him the rein-deer, which furnishes him with tent, clothing, bed, meat, and drink; which enables him to take distant journies; which supplies almost all his wants, and whose maintenance costs him very little trouble. Had these poor creatures, in the midst of all their hardships, a more perfect knowledge of God, such a knowledge as Revelation alone can give; did not the wildness of their disposition and their natural indifference prevent them from tasting the sweets of friendship, so essentially necessary for the felicity of human life; were it possible to unite those advantages with that serenity of soul by which they are characterized: these people, whom we think so miserable, whose mode of life excites horror in our depraved imagination, would not be so much to be pitied as we suppose.* And if it be true that the estimation of happiness falls rather within the province of the feelings than of reason; if it be true that genuine felicity is not confined to certain nations and certain climates, but, that with the mere necessaries of life and peace of mind, happiness may be found in any corner of the world;

* With respect to the disposition of these people, the traveller quoted in the preceding note observes, that "they are happy, not in the multiplicity of pleasures, but in the absence of pain. They never think of the past, or give themselves any concern about the future; and the delight they take in a state of indolence demonstrates, that they are exempt from that restlessness and those incentives to activity which agitate the individuals of polished nations." T.

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we have a right to ask the question: What does the Laplander want to make him happy?

JANUARY 19.

WISE CONSTRUCTION OF THE GLOBE.

THOUGH the human understanding is too limited to fathom, or merely to discern the wise designs of the Creator in the construction and arrangement of our globe; yet, if we make a proper use of our reason, we may, with the aid of our senses and of serious reflection, discover enough to fill us with admiration of the wisdom of the Deity. The form of the earth alone is sufficient to produce conviction of this truth. It is nearly spherical; and for what reason? That every point of its surface might be inhabited by living creatures. This end could not have been attained, had not the inhabitants of the earth every where enjoyed a sufficient degree of light and heat; had not the water been able to diffuse itself with ease over every part; had the winds been prevented from blowing to every point, in such directions as are most beneficial for the earth. For the accomplishment of all these purposes, the earth could not have had a more convenient form than that which it has received. Its globular figure renders it possible for heat and light, two things so indispensably necessary for life, to be equally distributed over the whole earth. Were it not for this form, the vicissitudes of day and night, cold and heat, wet and dry could not take place. If the earth had been square, conical, cubical, or of any other angular form, one part, and that the great

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est, must have been entirely deluged with water and the other perfectly dry. In this case some countries would have been deprived of the salutary agitation of the wind, while others would have been desolated by incessant tempests.

If I consider the immense mass of which our earth is constructed, what fresh reason I find to admire the infinite wisdom of God! Were its surface more soft and spongy than it is, men and other animals would sink into it. If it were harder, more solid and impenetrable, it could neither be cultivated, nor produce and nourish such a multitude of plants, herbs, roots, and flowers. Our globe is composed of regular strata or beds of various kinds of stones, metals, and earths. The numerous advantages which result from this arrangement, and especially to mankind, must be obvious to every person. How should we procure fresh water, so necessary to the wants and comforts of life, were it not purified and filtered through the beds of sand, which we discover at a considerable depth in the earth? The surface of our globe presents an admirable variety of plains, vallies, hills, and mountains. How evident are the wise purposes of this disposition! How much the earth would lose of its beauty if it were one uniform plain! How much more healthy it is rendered by this alternation of hill and dale! How much more convenient for the abode of so many different species of animals! How much better adapted to the production of various kinds of plants and vegetables! Were there no mountains, the earth could not contain so many men and animals as it now can; we should have fewer plants, herbs, and trees, and no metals and minerals; we should feel the want of springs and

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rivers; and the ascending vapors could neither be dispersed nor condensed were it not for the agency of the lofty mountains.

Who can forbear to acknowledge that the whole plan, the figure, the internal and external conformation of the earth, are regulated by the wisest laws, all of which tend to promote the comfort and happiness of its inhabitants. Yes, Supreme Author of Nature, every thing in the earth hast thou ordered with wisdom! Whithersoever I turn my eyes, whether I examine the surface, or contemplate the interior structure of the earth on which thou hast placed me, every where I discover traces of thy unfathomable wisdom and goodness. How regular, how beautiful, how convenient is the abode thou hast constructed for thy creatures! I, who reside in it but a short time, can discern only a very small portion of it. But how do I exult at the thought of that new world, of which I shall one day be an inhabitant! There shall I discover infinitely more of thy mighty works! And how great will be the beauty, how abundant the treasures of that new abode, when this, where I only tarry a little, in my pilgrimage, is so rich in pleasures and in blessings!

JANUARY 20.

BRIEF MEDITATIONS ON THE WORKS OF GOD FROM THE HOLY SCRIPTURES.

HEARKEN to this, stand still and consider the wondrous works of God! *Job* xxxvii. 14.

He hath made the earth by his power; he hath established the world by his wisdom; and hath

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stretched out the heavens by his discretion. He is the former of all things. *Jer.* x. 12. 16.

And God said: Let there be light—and there was light: and God saw the light that it was good; and God divided the light from the darkness, and God called the light day, and the darkness he called night. *Gen.* i. 3, 4, 5.

Thou, even thou art Lord alone, thou hast made the heaven, the heaven of heavens with all their host; the earth and all things that are therein; the seas and all that is therein; thou preservest them all, and the host of heaven worship thee. *Neh.* ix. 6.

O Lord my God! thou art very great; thou art clothed with honor and majesty. Who coverest thyself with light as with a garment; who stretchest out the heavens like a curtain; who layeth the beams of his chambers in the waters; who maketh the clouds his chariot; who walketh upon the wings of the wind; who maketh his angels spirits, and his ministers a flaming fire. Who hath laid the foundations of the earth that it should not be removed for ever. Thou coveredst it with the deep as with a garment; the waters stood above the mountains. *Psalm* civ. 1—7.

He hangeth the earth upon nothing; he bindeth up the waters in his thick clouds, and the cloud is not rent under them. He divideth the sea with his power, and by his understanding he smiteth through the proud. *Job* xxvi. 7, 8.

He maketh the small drops of water; they pour down rain according to the vapor thereof; which the clouds do drop and distil upon man abundantly. Also can any understand the spreadings of the clouds, or the noise of his tabernacle? Behold he

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spreadeth his light upon it, and covereth the bottom of the sea. For by them judgeth he the people; he giveth meat in abundance. *Job* xxxvi. 27—31.

God thundereth marvelously with his voice; great things doth he which we cannot comprehend. For he saith to the snow: Be thou on the earth; likewise to the small rain, and to the great rain of his strength. Out of the south cometh the whirlwind; and cold out of the north. By the breath of God frost is given; and the breadth of the waters is straitened. Also by watering he wearieth the thick cloud; he scattereth his bright cloud. And it is turned round about by his counsels: that they may do whatsoever he commandeth them upon the face of the world in the earth. He causeth it to come, whether for correction, or for his land, or for mercy. *Job* xxxvii. 5, &c.

He is wise in heart and mighty in strength: who hath hardened himself against him and hath prospered? Which removeth mountains, and they know not; which overturneth them in his anger: which shaketh the earth out of her place, and the pillars thereof tremble. Which commandeth the sun, and it riseth not: and sealeth up the stars. Which alone spreadeth out the heavens, and treadeth upon the waves of the sea. Which maketh Arcturus, Orion, and the Pleiades, and the chambers of the south. Which doeth great things past finding out, yea, and wonders without number. *Job* ix. 4—10.

Thou didst cleave the fountain and the flood: thou driedst up mighty rivers. The day is thine, the night also is thine: thou hast prepared the light and the sun. Thou hast set all the borders of the

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earth: thou hast made summer and winter. *Psalm* lxxv. 13—17.

He caused the east wind to blow in the heaven: and by his power he brought in the south wind. *Psalm* lxxviii. 25.

He watereth the hills from his chambers; the earth is satisfied with the fruit of thy works. He causeth the grass to grow for the cattle, and herb for the service of man: that he may bring forth food out of the earth. *Psalm* civ. 13, 14.

He giveth to the beast his food, and to the young ravens when they cry. *Psalm* cxlvii. 9.

The eyes of all wait upon thee, and thou givest them their meat in due season. Thou openest thine hand, and satisfiest the desire of every living thing. *Psalm* clxv. 15, 16.

Thus saith the Lord thy Redeemer, and he that formed thee from the womb: I am the Lord that maketh all things, that stretcheth forth the heavens alone, that spreadeth abroad the earth by myself. *Isa.* xliv. 24.

For thus saith the Lord that created the heavens, God himself that formed the earth and made it; he hath established it, he created it not in vain; he formed it to be inhabited. *Isa.* xlv. 18.

I am God, and there is none else; I am God, and there is none like me. I form the light and create darkness: I make peace and create evil: I the Lord do all these things. *Isa.* xlvi. 9. xlv. 7.

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JANUARY 21.

THE WONDERS OF THE HUMAN VOICE.

THE human voice is one of the greatest masterpieces of the Creator. Whether we consider its principle, its variations, or its organs, it is impossible to fathom its admirable mechanism. Let us now endeavor to reflect on it in silence.

Whence comes it that you are capable of emitting sounds? The reason is to be found in the structure of the larynx, or upper part of the windpipe. The small aperture in it occasions a sound, when the air is rapidly driven through it. The windpipe is composed of circular cartilages, which are united by an elastic membrane. The larynx has at its entrance into the gullet a small covering or valve, which opens to afford a passage to the air when it is emitted through this channel. It opens more or less to modify and to multiply the tones of the voice; and shuts when we swallow, to prevent the food which glides over it into the stomach from entering the windpipe.* Experience teaches that:

* "And here," says a popular English writer in illustrating this curious subject, "we may remark the almost complete success of the expedient, namely, how seldom it fails of its purposes; compared with the number of instances in which it fulfils it. Reflect how frequently we swallow, how constantly we breathe. In a city-feast for example, what deglutition, what anhelation! Yet does this little cartilage, the epiglottis, so effectually interpose its office, so securely guard the entrance of the wind-pipe, that, whilst morsel after morsel, draught after draught, are coursing one another over it, an accident of a crumb or drop slipping into this passage, (which, nevertheless, must be

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Wonders of the human voice

the human voice is capable of producing twelve full tones. The immediate occasion of the voice is the expulsion of the air from the lungs through the larynx, and its aperture, called the glottis, that is covered with the valve already mentioned, which is hence denominated the epiglottis. The opening of the glottis is extremely small, and in every variety of tone its diameter must suffer a sensible change; for the same diameter must ever produce the same tone. So wonderfully minute are its contractions and dilations, that it has been computed that, in some voices, its opening, not more than the tenth of an inch, is divided into upwards of twelve hundred parts, the different sound of every one of which is perceptible to an exact ear.

In these properties, which are so astonishing, we have, however, very little advantage over animals. But the superiority of man consists in this, that he can so modify his voice as to pronounce letters and words. To this operation, the palate, the teeth, and the lips contribute their share. To say nothing of the various articulations of the human voice, it is worth while to consider the manner in which we pronounce the five vowels. When we pronounce the letter *a*, the sound is quite different from that of the letters *e*, *i*, *o*, *u*, though all be pronounced in the same tone. In order to pronounce these several letters, a different form must be given to the cavity of the mouth. In this respect the human mouth possesses peculiar advantages over the mouths

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opened for the breath every second of time) excites in the whole company not only alarm by its danger, but surprize by its novelty. Not two guests are choked in a century." T.

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of all other animals. Even those birds which learn to imitate the human voice, are never able to pronounce the vowels distinctly; so that their imitation remains very imperfect. In the pronunciation of consonants, three organs are particularly serviceable; the lips, the tongue, and the palate; but the nose also is extremely necessary for this purpose. If you hold it, you will not be able to pronounce certain letters, at least, not distinctly or intelligibly. A strong proof of the extraordinary structure of the mouth, by which it is so excellently adapted to the pronunciation of words, may be deduced from this circumstance, that the ingenuity of man has never been able to imitate it by means of machines. It has, it is true, imitated singing; but without producing the smallest articulation of tones, or any distinction between the different vowels. In many organs there is a stop called *the human voice*, but, in general, its tones resemble the dipthongs *ai* or *ae*; and all the art of man would not be sufficient to imitate one single word, as pronounced by the human voice.

Let these considerations furnish you with a new occasion to reflect on and to admire the wonderful wisdom and goodness of God, manifested in the construction of every part of your body. May you be led by this reflection duly to estimate the value of speech, by which you are exalted above all other animals! How gloomy would human society be, how little enjoyment should we be able to derive from our mutual intercourse with each other, had we not the faculty of communicating our ideas by speech, could we not deposit the secrets of our hearts in the bosom of a friend! How deplorable would be our lot, were we in the number of those

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unfortunate beings, who, from their infancy, have been deprived of the faculty of speech. Alas! how many such are there among us! Learn then, whenever you see them, to prize your happiness the more highly, and bless the Lord, who, among the innumerable multitude of benefits conferred upon you, has not denied the gift of speech. Use it for the purpose for which it was designed by the Creator. But you will not make a salutary use of it unless you employ it to glorify God, and to edify, instruct, and comfort your fellow-creatures.

JANUARY 22.

THE DUTY OF SELF-EDIFICATION IN WINTER.

To you who with laudable solicitude avail yourselves of every opportunity for edification, I now address myself. I wish to remind you that it behoves you also to employ the days of winter in such a manner, that it may prove a time of happiness for your souls: or rather, I wish to shew you how pleasing and advantageous the practice of this duty may be to you.

How edifying will the winter be for you, if, at each change, each new aspect of nature, you direct your thoughts to that God, whose glory even in this season is manifested in the world! When you behold the earth mantled in snow, the rivers covered with ice, the trees stripped of their leaves, and all nature dreary and desolate, reflect for what purposes your Creator has ordained that it should be so. The smallest consideration will at least convince you, that God has regulated all things by wise laws, and for the general good. And though

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your understanding be so limited that you can discover only a very small part of the designs of Providence, it will be sufficient if you learn that snow and ice, and all the phenomena of winter, are destined by the Almighty to conduce to the fertility of the earth and to the comfort of his creatures.

You will meet with innumerable objects which will give you occasion to make edifying reflections. You see how perishable is the snow, how soon the ice melts, how short are the days. Are not all these circumstances calculated to remind you of the frailty of life? You dwell in a warm apartment, and possess every thing that is necessary for your comfort. Should not these blessings cause you to think on your poor brethren, who have neither fuel, clothing, nor bread? You observe how short is the interval between day and night. Should not this lead you to reflect on the brevity of life, and to study to employ every hour to the best advantage? You observe with what imprudence many persons venture upon the ice. May not this serve for an emblem of the thoughtlessness of those mortals who are intent only on the enjoyment of the pleasures of this life? How many other objects in this season may furnish you with matter for such reflections as have a tendency to exalt your piety and to promote your everlasting happiness. And if you seek food not only for your understanding, but also for your heart, you will avail yourself of every object that can answer this end, and will rejoice at every good thought, every virtuous resolution, every pious reflection that is awakened in your soul. Imitate the bee; take what is to your taste, and

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select the most beautiful flower. To a pious soul the most barren field is rich in sweets.

From this edifying application of winter I can promise you the greatest advantages. You will be enabled by it to triumph over sensual propensities and over your heart, naturally so addicted to dissipation. You will not need to have recourse to turbulent pleasures, in order to escape the torments of *ennui*. When others seek recreation in gaming, at balls, or at the theatre, you will find in the contemplation of the works of God, whether in your retirement or in the society of select friends, the purest and most durable pleasure: for nothing can be more delightful than to raise our hearts above the vanities of the world, and to approach to the occupation of the angels and spirits in bliss. What rapture, to find God every where; to discover in the flake of snow, as well as in the flowers of spring, in the cold of winter, as well as in the heat of summer, the wisdom and beneficence of our Almighty Creator! And, reader, this delight, which ten thousand times surpasses all the pleasures of the world, shalt thou experience, if thou hast learned habitually to edify thyself by every occurrence.

O divine spirit, let thy power assist my feeble heart! Let me raise myself wholly to thee! But thou seest how the world often holds me in chains, and prevents my soul from soaring to thee. Release me from the bonds of vanity, and lead me nearer and nearer to thyself. How edifying shall my death one day be, if I have employed my life to so good a purpose! And how shall I rejoice in my felicity, when removed to that blissful abode, where I shall incessantly contemplate thy wonders

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and thy works, where I shall with astonishment discover the wisdom of thy plans, where I shall no longer be attracted by trifling things, but where subjects the most sublime shall excite me to glorify thy holy name!

JANUARY 23.

FEAR OF SPECTRES.

THE long nights of winter bring terror and dismay to many persons who are tormented with the ridiculous apprehension of spectres. This superstitious fear was less reprehensible in the time of our ancestors, when people had not so correct an idea of the nature of spirits, and when religion itself favored this superstition: but that such notions should still be entertained in this enlightened age, is truly matter of astonishment. It shews, however, the ingenuity of man in tormenting himself. It is not sufficient that so great a number of real evils from time to time afflict him; but he creates others which he might easily have avoided, and employs the phantoms of his imagination to render himself miserable. How wretched is the miser from his fear of thieves, the misanthrope through his distrust of mankind, and the discontented person from anxiety concerning the future. Hence let us learn to know the nature of the human heart, and the necessity of watching over the imagination. If at night it presents terrific phantoms to our view, so in the day it seduces us by alluring images to vice. O that we were as ready to shun the temptations to sin, as we are to flee from an apparition! But,

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THE MISER

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alas! in the former case man is a hero, in the latter a coward.

But whence comes it, that, on this imaginary occasion, such excessive fear seizes the minds of many persons, who, under circumstances infinitely more terrific, remain perfectly composed? We are terrified at the supposed appearance of a single spirit; while the certainty of being one day removed to a world peopled with incorporeal beings makes not the least impression upon our minds; nay, we feel not the slightest emotion of fear, though we know that we are hastening into the presence of that Spirit who is infinite and eternal. Should a deceased acquaintance appear to us at the midnight hour, and declare that we should shortly join him, the boldest man would be appalled, would reflect seriously on the circumstance, and anxiously await the event. But why are we so inattentive to the voice of the Almighty, when he calls to us: "Prepare to meet thy God!" How foolish are we, to remain totally unconcerned, when it would be the greatest wisdom to fear, and to tremble in every joint when there is nothing to be dreaded.

Fear not, O my soul, the nocturnal phantoms of the imagination; but fear that Being, whose coming shall appal the most undaunted heroes, so that they will call to the mountains and to the hills to cover them. Dread above all things the wrath and displeasure of the Most High; then mayst thou banish all other fear, and exclaim with David: "The Lord is the strength of my life, of whom should I be afraid?"

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JANUARY 24.

SUBTERRANEOUS FIRE.

On digging a little downward into the earth, we find a greater degree of cold than at the surface, which is penetrated by the beams of the sun; so that the inhabitants of the hot climates can preserve ice the whole year round to cool their wine. But if we descend forty or fifty feet lower, it becomes sensibly warmer. Whence this heat proceeds is a question that cannot be answered with certainty. Some have supposed that the centre of the earth consists of fire. This notion has, however, been proved to be destitute of foundation, since it has not been demonstrated by authentic observations, that this heat increases in proportion as we penetrate below the surface of the earth. On the contrary, many experiments evince, that it rather decreases, though never to less than thirty-six degrees, and that its variation at the same distance below the surface, constantly bears a proportion to the variation of the solar heat at the surface.

That fire exists, or is kindled at least in the bowels of the earth, is, however, manifested by the astonishing effects which it produces, by the tremendous eruptions that from time to time take place. Mountains are invariably the seat of these explosions; and among the numbers of this kind, Etna in Sicily, and Vesuvius in the kingdom of Naples, are particularly celebrated. The accounts given of these two volcanoes are tremendous. Sometimes they discharge black clouds of smoke; sometimes a rumbling noise is heard; this is succeeded by thunder and lightning, accompanied with earth-

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quakes; the smoke becomes bright and luminous; stones are ejected with great noise, and fall back into the fiery gulph. These eruptions are sometimes so violent, that vast fragments of rock are whirled aloft into the air. The interior force exerted within these mountains has been so powerful, that in the eruption of Etna, in 1669, burning rocks, sixty palms in length, were thrown to the distance of a mile, and smaller stones were carried three miles.

Other phenomena, still more tremendous, accompany these eruptions. At certain times the vitrified entrails of the earth boil up, so that their formidable scum overflows, and runs for miles over the adjacent fields, destroying every thing in its course. This torrent of fire continues several days; one wave rolls after another till it has reached the sea. Even there the internal strength of its fire keeps it burning, so that it runs on to some distance without being quenched in the waters of the ocean. Who can think without horror on the devastations occasioned by these eruptions? Hamlets and villages, with all their flourishing plantations, are swallowed up; the ripening crops are consumed; corn-fields, olive-gardens, and vineyards are laid waste. In one eruption of Etna, we are told that a stream of lava buried fourteen towns and villages, and the rumbling of the mountain was heard at the distance of twenty miles.

But of what use are these volcanoes which spread terror and desolation over the earth? Why has the Lord created them? Why does he permit them to spend their fury incessantly upon his creatures? And what am I who dare to ask such questions? Have I a right to call infinite wisdom to account

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for the arrangements it has made? The existence of volcanoes cannot be the effect of chance; nay, I may thence conclude, that the Creator must have had the wisest reasons for permitting these mountains to arise upon the earth. What is still more, I even discover in this circumstance that beneficent care of the Deity which provides for the welfare of the universe. However great may be the ravages caused by the eruptions of volcanoes, yet they are nothing in comparison of the salutary effects which they produce with regard to the whole. As subterraneous fire exists in many places, volcanoes are indispensably necessary, as vents, by means of which the action of this element, raging in the bowels of the earth, is broken and diminished. Though the regions in which this subterraneous fire is most powerful, are subject to earthquakes, yet these convulsions would be infinitely more violent were it not for the existence of such mountains. Italy would not be the most favored of countries, if the mountains were not sometimes to afford a vent for its subterraneous fire. And, after all, who knows but many other advantages with which we are unacquainted, may accrue to the whole earth from these terrific explosions?*

* For an ingenious and very plausible theory of the origin, uses, and nature of volcanoes, see *St. Pierre's Studies of Nature*, Study IV.

Dr. Gregory, in his useful epitome entitled *The Economy of Nature*, observes, that "the origin of these fires is not easily explained. Iron filings mixed with powdered sulphur, and the whole moistened with water into a paste, will swell, become hot, and, if the quantity is considerable, will throw out a blue flame. Now large beds of martial pyrites, which are natural combinations of iron and sul-

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These considerations, however, are sufficient to convince me that God has ordained this natural phenomenon for the wisest and most beneficent purposes. Though much that relates to it appears dark and incomprehensible, I will put my hand upon my mouth and say: Lord, just and true are thy judgments, and inscrutable are thy ways! God of Majesty, who dost such great and such terrible things on the earth, who would not fear thee!

JANUARY 25.

OF COMETS.

THAT extraordinary star which derives its name from the vapor with which it is surrounded, is undoubtedly one of the orbs belonging to our system. It revolves, like the other planets, round the sun. Its orbit, however, differs from the orbits of all the rest, and its figure is likewise different. Seen through a telescope, it appears full of spots and in-

phur, are known to exist in different parts of the earth; the only difficulty which attends this explanation of the origin of volcanoes, is, that the presence of air is in general necessary for the production of actual flame. That fluid may, however, be possibly supplied by a communication with some extensive caverns, which may themselves receive if by openings at the distance of many miles from the crater of the volcano. It does not seem improbable that the volcanoes which now burn, may have a communication with the cavities and craters of extinguished volcanoes, and thence derive a supply of air sufficient to account for the inflammation of large beds of pyrites and bituminous matters." T.

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equalities, except the vapor which commonly surrounds it prevents its being distinctly perceived. The dimensions of comets are extremely various. Many are scarcely equal to stars of the third or fourth magnitude, while some exceed those of the first. In the centre we discover an opaque nucleus, which sometimes divides, and appears like the edge of the disk. The figure of comets is not always perfectly round, nor is their light at all times equally strong and vivid. The tail, which is always on the side farthest from the sun, is so thin and transparent, that the fixed stars may be seen through it. This tail or train sometimes extends from the horizon nearly to the zenith, and gives the orb a magnificent aspect. The farther it reaches from the comet, the broader and the less luminous it becomes. Sometimes the tail is divided into many curvatures and rays.

Such are some of the discoveries which an attentive observation of comets has enabled man to make; but how inconsiderable is our progress toward a complete knowledge of those bodies! Much that belongs to these eccentric orbs is out of the reach of human sight. Whether a comet be an aqueous body or a burning globe cannot be determined with any certainty. Nor can any satisfactory answer be given to the following questions: Can such a globe be inhabited, as it is sometimes, from its vicinity to the sun, exposed to the intense heat of that luminary; and sometimes travelling far beyond the orbits of the other spheres, it is involved in the thickest darkness, where the rays of the sun cannot possibly have any influence? Or has the Almighty Judge destined it as a place of punishment for his creatures? Is its rugged sur-

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face, exposed only to the extremes of heat and cold, the abode of reprobate beings? Are these erratic bodies designed, at some future period, to dash the planets from their orbits, and hurl them to destruction? Or are they still a chaos, like the earth, before it was fashioned by the Creator; or is not their destination to be accomplished till the earth shall be no more? These are questions, the impossibility of solving which may convince us that we are men.*

* The reader will not be displeased to find subjoined the opinion of the ingenious Ferguson respecting comets:

"The extreme heat, the dense atmosphere, the gross vapours, the chaotic state of the comets, seem at first sight to indicate them altogether unfit for the purposes of animal life, and a most miserable habitation for rational beings; and therefore some are of opinion that they are so many hells for tormenting the damned with perpetual vicissitudes of heat and cold. But when we consider, on the other hand, the infinite power and goodness of the Deity; the latter inclining, the former enabling him to make creatures suited to all states and circumstances; that matter exists only for the sake of intelligent beings; and that wherever we find it, we always find it pregnant with life, or necessarily subservient thereto; the numberless species, the astonishing diversity of animals in earth, air, water, and even on other animals; every blade of grass, every tender leaf, every natural fluid, swarming with life; and every one of these enjoying such gratifications as the nature and state of each requires; when we reflect, moreover, that some centuries ago, till experience undeceived us, a great part of the earth was adjudged uninhabitable; the torrid zone by reason of excessive heat, and the two frigid zones because of their intolerable cold; it seems highly probable, that such numerous large masses of durable matter as the comets are, however unlike they be to our earth, are not destitute of beings capable of contemplating with wonder, and acknowledging with gratitude, the wisdom, symmetry,

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Men, however, too often lose sight of this truth; for if they were always aware of the limited extent of their knowledge, the appearance of a comet would not lead them to conjectures, which so ill accord with our circumscribed intelligence. Some consider the comet as the forerunner of impending judgments; others read in it the fate of nations and the fall of empires; many imagine that it menaces pestilence, war, inundations, and other calamities. These superstitious people do not consider that comets are phenomena perfectly natural, the return of which may be calculated with certainty, and which consequently cannot in the least derange the order of things. They never reflect that these bodies, like the other planets, have a much more important destination than that which superstition assigns them. Is it possible that the all-wise Being could have placed such prodigious orbs in the heavens merely to announce their future fate to a few of his creatures? May the comet, after having traversed the regions of boundless space, be to me, on its return into our sight, not an omen of calamity, but a herald of the majesty of the Most High! I will adore the Lord, who has prescribed to this orb its course, who conducts it through the immeasurable expanse of æther, and who commands it now to approach near to the sun, and now to withdraw to the utmost limits of the planetary system. Oft as it shall blaze above my head, shall my spirit with eager flight soar upward to the Lord, the sove-

and beauty of the creation. Whatever be their destination, this is an undoubted truth, that wherever the Deity exerts his power, there he also manifests his wisdom and goodness." T.

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reign ruler of millions of worlds. Then I will indulge the sublime idea, that perhaps, ere long, I shall, as a citizen of eternity, traverse the immense expanse of heaven, and, without needing the assistance of telescopes, shall discover thousands of new worlds!

JANUARY 26.

FORMATION OF SNOW.

Is it worth while to examine such a common phenomenon of nature? Such may perhaps be the exclamation of many of my readers, on seeing the title of this meditation. My design is, to call their attention to this wonder, and to exhibit to them, in the formation of snow, a spectacle which possesses abundant charms for a reflecting mind.

Snow is composed of aqueous particles frozen in the air. Frozen water becomes ice; snow therefore differs from ice only in this, that the water which constitutes ice freezes when at its usual density, but that which forms snow freezes when its particles are separated or converted into vapor. From a variety of experiments it has been found that snow is twenty-four times more rare than water, and that when it has just fallen it occupies ten or twelve times as much space as the water which it yields when melted. Nevertheless, snow is not merely water, for the structure of its parts, and the effects it produces, correspond neither with those of water nor with those of ice.

On examining a flake of snow with a magnifying glass, the whole of it appears to be composed of fine shining spiculæ, diverging, like rays, from a

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centre. As the flakes fall down through the atmosphere, they are continually joined by more of these radiated spiculæ, and thus increase in bulk, like drops of rain or hail-stones. Many are of a regular figure; for the most part, stars of six points, and are as perfect and transparent ice as any we see on a pond. On each of these points are other collateral ones, set at the same angles as the main points themselves. Others seem to have been thawed and frozen again into irregular clusters by various winds; so that the whole body of snow resembles an infinite mass of irregularly figured icicles. The theory of the formation of snow is therefore briefly this: A cloud of vapors being gathered into drops, these drops immediately begin to descend. Meeting with a freezing air as they pass, in their fall, through a colder region of the atmosphere, each drop is congealed into an icicle, shooting itself forth into several points. These still continue their descent, and meeting with some intermitting gales of warmer air, or touching upon each other in their continual waftage to and fro, some of them are a little thawed, blunted and again frozen into clusters, or entangled so as to fall down in what are denominated flakes.

How wonderful would the formation of these flakes of snow appear to us, were we not accustomed to see them every year! And because wonders of this kind so frequently occur, shall we, on that account, pay the less attention to them? No, my friends, let us rather be so much the more diligent to contemplate them, and to admire the power of God, which, in every season, is so inexhaustibly rich in means for promoting the comfort and happiness of mankind. Can any one justly complain

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that winter does not afford a variety of pleasures, both for the senses and the understanding? Is it not an astonishing spectacle to behold how Nature has formed the flakes of snow with the most exact symmetry, in what infinite numbers they descend from the atmosphere, and how many different forms water assumes under the creating hand of God? Sometimes it is fashioned into hail, sometimes congealed into ice, sometimes converted into hoar-frost, and sometimes into innumerable flakes of snow. All these changes contribute as well to the use as to the embellishment of the earth. In all, even the minutest phenomena of Nature, God is adorably great.

Let me no longer remain insensible at the aspect of the snow, or behold it again with thoughtless indifference. Its formation and its beneficial effect on the earth shall lead me to him who has created snow, and who scatters it over the face of the earth. To thee, O God, who lovest all things, and rulest over all Nature, who givest snow like wool, and scatterest hoar-frost like ashes, who commandest cold and ice to fertilize the earth, to thee be rendered praise, honor, and glory!

JANUARY 27.

TRANSITORY NATURE OF HUMAN LIFE.

THAT life is fleeting is an incontestible proposition; but to judge from the conduct of most men, we should not suppose that it belonged to the number of established truths. I will now appeal to the reader's own experience. Every step you have

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taken from your birth to the present moment is capable of convincing you how transitory is life.

Only consider how swiftly days, weeks, months, and years have passed, or rather flown away. They were gone before you perceived it, and without leaving any impression behind. Endeavor to recal them to your memory, and to follow them in their rapid flight. Can you give only a tolerable account of all the periods of your life? And had not certain moments been distinguished by some remarkable circumstance, you would know still less of the history of your life. How many of your juvenile years glided away amid the sports of infancy, of which you can say nothing more than that they are past! How many more were spent in the thoughtlessness of youth, when you pursued your pleasures with such avidity that you could not spare time for reflection. To these succeeded the graver years of more mature age. You then thought that it was time to change your course of life, and to act like a rational being; but you were so deeply involved in the affairs of the world that you had no leisure to reflect on your past years. As your family increased, your wants multiplied, and your cares and efforts to satify them redoubled. Old age will imperceptibly steal on, and then, perhaps, you will want either leisure or power to reflect on your past life, to weigh well what you have done, or neglected to do, and to consider for what purpose God has placed you in the world. But how can you promise yourself this advanced age? A thousand accidents may break the feeble thread of human life before it has attained its average length. The new-born infant expires, and moulders to dust.

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Transitory nature of human life.

The hopeful youth is cut off in the flower of life. A violent disease or an unforeseen accident hurries them to the tomb. Dangers and accidents multiply with age. The seeds of distempers are sown by negligence and intemperance, and we become more liable to the attacks of infectious diseases. The succeeding years are still more dangerous; so that one half of those who are born into the world are soon taken out of it again, and perish in the short space of the first seventeen years.

Such, reader, is the brief, but faithful history of your life. O that you may so employ it as to acquire the important knowledge how to number your short days, and to make the best use of your fleeting time! While you have been perusing these reflections, some minutes have elapsed. What a precious treasure of hours and days might you not accumulate, were you to apply some of your numberless minutes to so useful a purpose! Think seriously, that with every moment a portion of your life passes away, which cannot be recalled, and the remembrance of which excites in the soul either joy or regret. What celestial happiness to look back on the days that are past, and to be able to say: "I have lived so many years, in which I have sown the rich seed of good works. I have no wish to recal them, nor do I regret that they are past." You will be enabled thus to express yourself, if you devote the brief measure of your time to the important interests of eternity, for which purpose every moment of your life is given to you.

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JANUARY 28.

OF THE FROST ON WINDOW-PANES.

THE simplicity, regularity, and variety of Nature in the production of her smallest works, are evinced in the frozen panes of glass, the extraordinary figures upon which are often admired, but are not considered with that attention which the subject, though so trivial, deserves. The phenomenon of which I am speaking is occasioned by the fluidity of fire. When it is shut up in the warm atmosphere of an apartment, it seeks to diffuse itself on all sides, and to penetrate wherever it finds the least of its own matter. Hence it is that it makes a passage through the close texture of glass, in which there is neither air nor heat. While the fire, or caloric, as it is denominated by modern philosophers, penetrates through the pores of the glass, it leaves behind, in the inside, the particles of air and water with which it was combined. The condensed vapors increase as the caloric escapes, till, at length, too little is left in the apartment to keep the water which adheres to the glass in a state of fluidity, and it is consequently frozen. The nitrous particles in the air combining with it, produce the variety of figures with which the window-panes are then covered.

The commencement or sketch of these figures consists of delicate filaments of ice, to which others are continually uniting, till a whole crust of ice is formed. From these fibres originate all the different kinds of figures, the first texture of which is clearly discernible. You first see the finest lines branching off from each other like the feathers

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Of the frost on window-panes.

from a quill, and these in their turn have smaller branches. When the first crust of ice is fixed, and the glass is more thickly frozen, the most beautiful flowers and lines of every kind, sometimes curved, sometimes spiral, are the result. It may be presumed that the astonishing variety of these figures is not merely occasioned by the motion of the air and the particles of caloric, but that the imperceptible pores in the glass also contribute to produce this effect. Be the cause of this phenomenon, however, what it may, it is certainly a *lusus naturæ*, which, though extremely simple, nevertheless displays a great degree of art.

Probably the reader may think this subject too trivial, and that the beauty of the phenomenon alone renders it worthy of notice. Admitting this to be the case, still it has, in my opinion, a great advantage over all those trifles which so often engage our attention. How many unimportant things are we in the habit of doing in our houses, and of making the subject of conversation in company! And is it not worth while to converse and to reflect on certain phenomena of nature, which we consider as trifles? Researches of this kind are pleasing to an inquisitive mind, though the subjects of them may be of little importance. Let us only lay aside our prejudices, and the puerile ideas which we are apt to form of the works of nature, and we shall think otherwise; where ignorance perceives nothing but trifles unworthy of attention, we shall often discover astonishing master-pieces of art; for Nature manifests in all her works, a wisdom which extends even to the most insignificant, and which is always distinguished by this very circumstance from all the productions of human ingenuity.

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Utility of bread.

But, can any object be trifling that furnishes occasion for useful reflections? I am not ashamed to learn, even from the frozen window-panes, a truth, which, if I pay attention to it, may have a powerful influence over my happiness. Behold, reader, the variegated flowers which the frost has pourtrayed upon the glass. How beautiful they appear; but one ray of the meridian sun effaces them for ever. Thus the imagination paints every thing beautiful to us; all its representations of the happiness to be derived from the possession of the goods of this world, are beautiful images, which the light of reason is capable of dispelling. Surely the trouble of stopping to consider a little phenomenon of Nature is abundantly repaid by the lesson of wisdom it has afforded an opportunity of inculcating.

JANUARY 29.

UTILITY OF BREAD.

Of all the aliments which our bounteous Creator has given in such variety and profusion to man for the support of life, bread is the most common and the most wholesome. Amidst all the delicacies which load the table of the prince, it is as necessary as at that of the day-laborer. The sick derive as much benefit from it as those who are in health. Nature herself seems to have destined it for the nourishment of man, as there is scarcely any country on the face of the globe but what is capable of producing the plant which furnishes us with bread: for it would be difficult to find a region in which wheat would not ripen, if cultivated with proper care. A very strong proof that we cannot dispense

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with the use of bread is this, that it is almost the only food of which we may daily eat without being cloyed. All the far-fetched and costly viands which the pride and luxury of man have invented, cease, in time, to give that pleasure to our palate, which they did perhaps at first. The more frequently we partake of them, the greater disgust they, in general, excite; but bread we always eat with pleasure, and the old man, whose daily nourishment it has been for seventy years, will still continue to relish it, when for him all other aliments have lost their savor.

Reader, while you make a daily use of bread, it is but right that you should reflect on the bounty of your Creator in giving it to you. Chuse from among the great number of aliments those which you like the best. Is any of them so natural, so wholesome, so strengthening, to nutritious as bread? The flavor of the most precious aromatics is not so refreshing as the simple taste of bread. That of spices may be more powerful and heating, but the taste of bread, simple as it is, may convince you that this substance contains particles essentially necessary for the preparation and repair of the nervous fluid. What demonstrates its nutritive quality is, that when it is moistened with water, it dissolves, and becomes a clammy mass. The stomach, therefore, has occasion for no particular powers to dissolve and to digest it. And reflect farther how evidently the Creator has provided for your health, in assigning you bread for your food. Our healthiest juices are disposed to putridity; we therefore required an aliment that should oppose this tendency, and that quality is found in bread. As this kind of food, belonging to the vegetable

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kingdom, is inclined to acidity, it is an excellent preservative against putrefaction. Bread likewise possesses this advantage, that we may give it whatever degree of consistence we please, so that it is capable of being adapted to every stomach, and may be kept for a longer or a shorter period.

I should be utterly unworthy of the bread which I daily eat, were I not grateful to the bounteous giver of this blessing. Shall I not thank my gracious Father, who causes bread to grow out of the earth to nourish and to strengthen me? Shall I, like the brute, enjoy my food without thinking of him who gives it? Shall I daily eat and be satisfied, without once reflecting on the means by which I am nourished? No, my Father and my God! my grateful heart shall render thanks to thee, to whom I am indebted for the bread I eat. Long did I in my infancy receive my food without being able to raise my heart to thee; now that I know it is thou who feedest me, will I testify my gratitude for thy care.

But how can I better evince my gratitude to thee than if I divide the bread which thou sendest me in such abundance with those to whom thou hast given a more scanty portion? O my Father, many of thy children are not so well provided for as I am, though they may deserve it much better than I do. They have scarcely bread, and still less a sufficiency of other aliments for their subsistence. I have received both from thy hand, and am ready to resign a portion to my poor brethren, who have an equal right with myself to thy benefits. O that I had it in my power to refresh them all! But I know only a very small part of the distressed, and am too poor to pour forth even on all these the gifts

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of beneficence. But thou knowest all the indigent, who cry unto thee for bread; thou canst nourish them all, and to thy care I recommend them. Give them bread, and with their scanty pittance a cheerful and contented heart. Confer also the same gift upon me; then shall I be as happy with water and a crust, as the rich epicure with the most delicious wines and the most exquisite viands.

JANUARY 30.

DUTIES IN REGARD TO SLEEP.

It is a melancholy observation, which we often have occasion to make, that a great portion of mankind resign themselves to sleep with inconceivable carelessness. If sleep be considered only in respect to our bodies, it is an important change; but if we figure to ourselves the many accidents that may occur during the repose of the night, it appears to me that we ought by no means to throw ourselves into the arms of sleep, without taking the necessary precaution, and being fully prepared for what may happen. But how can it be otherwise than that men who, while awake, are so careless about the fulfilment of their duties, should be negligent and indifferent with regard to sleep? Let us therefore learn how we may glorify God, and discharge our duties as Christians, even in sleep.

What gratitude is due to our gracious Creator for the blessing of sleep! Perhaps you have never known its full value, because it has always been obedient to your call; but how easily might sickness, affliction, fear, or age prevent your enjoying the sweets of sleep. Then will you learn that sleep

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is the most pressing necessity of our nature, and one of the most inestimable blessings of the Almighty. Would you wish not to gain that knowledge but by the loss of this benefit? Surely not. Now, therefore, while you enjoy the refreshment of sleep, while this friend is so ready to appear at the approach of each night, never resign yourself to its influence without a sense of the most lively gratitude to your heavenly benefactor. Let this gratitude prevent you from abusing sleep, and cause you duly to appreciate its value. We are culpable, if, through indolence or effeminacy, we devote too great a portion of our time to sleep. In this respect, as in all others, Nature is content with little; seven or eight hours of sound and uninterrupted sleep are quite sufficient. But it is not less culpable purposely to abridge the hours of sleep, and from avarice, ambition, or any such motives, to deny yourselves the needful refreshment of sleep. In both cases you derange the order established by God, and violate the gratitude you owe him for the blessing of rest.

Above all things, endeavor to lie down in a proper disposition of mind. What would you do, were you certain that from the arms of sleep, you should pass into those of death? Would you not employ your last waking moments in preparing for this event; in examining your past life, and imploring pardon for your offences? And at the commencement of each night you have reason to consider this as a possible case. In every night of winter, that is, in the space of from twelve to fifteen hours, more than fifty thousand persons are removed into eternity. Who knows but your name may be inscribed on the list of those whom death

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shall snatch from the world. I shall now leave it to your own heart to decide what you would wish to have done, were you in the midst of sleep, summoned to appear before the judgment seat of Christ?

If in this night God should call thee into his presence, art thou ready to appear before him—him who knows all things, and from whom nothing can be concealed? O God! we daily feel the weakness of our nature; pardon our sins, we beseech thee, and enter not into judgment with us!

JANUARY 31.

OF THE PERPETUAL CHANGES IN NATURE.

ALL the changes in Nature proceed from invariable laws, established by the Creator when he framed the universe from nothing. For five thousand years, at certain appointed times, the same effects and the same revolutions have been observed on the earth and in the heavens. The sun, the moon, and the stars perform their prescribed course, with a regular motion; and who preserves, who directs them? Who has taught these bodies their seasons and their revolutions? What causes them to move continually with an equal degree of velocity? What prevents them from falling upon our globe, and wandering through the trackless expanse of heaven? All these questions lead us to God. It is he who has marked out their orbits, who upholds, who directs them, and prevents any irregularity in their movements. By laws unknown to us he has caused all the celestial bodies to be

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propelled with inconceivable velocity in their orbits, without ever deviating from them.

Even in the elements much nearer to us, continual revolutions are occurring, though they may not be perceived by a common eye, or a person of ordinary understanding. The air is in perpetual motion, being driven to and fro about the earth. Water pursues its appointed course without interruption. Rivers discharge themselves into the sea, and from the vast surface of ocean rise those vapors which form clouds. These are poured forth upon the earth, in rain, snow, and hail; they penetrate into the bosom of the mountains to feed the springs, whose streams are gradually swelled into rivers, which again empty themselves into the sea. All seasons succeed each other in an established order, and have a limited duration. The earth is continually expending her fecundity in the growth of the plants and crops which she annually produces; nevertheless she is not exhausted, because all that she has given is quickly returned by the constant circulation of nutritive particles. At the appointed time winter appears to procure for the earth refreshment and repose; and winter having accomplished the designs of the Creator, spring succeeds, and restores to the earth the children of which she has been bereft. A similar circulation may be observed in the body of every living creature. The blood flows incessantly through its various channels, imparts to each member the nutritive juices which it requires, and returns to the heart, whence it proceeded. All these revolutions in Nature lead us to God, who, at the creation of the world, established the principles of all these changes, and continues

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to the present moment to direct them by his wisdom and power.

These, reader, are considerations particularly worthy of attention at the conclusion of this month. By this wise direction of Providence, all the revolutions in Nature which have taken place in the past month, have answered the purposes for which they were designed. Each day the sun visited you, and having performed his appointed function, yielded the dominion to night. Each day has the goodness of God been renewed towards you, causing every revolution and every change to contribute to your well-being.

And now this month, with all its days, hours, and moments, is for ever past. Never will it appear again with the same relations, even though you should fifty times witness its return. At length all the wheels in the great machine of the universe shall stand still; their motions shall cease; the action of Nature shall be suspended, and days, months, and years shall be swallowed up in eternity.

Then, O eternal, immutable, and infinite Being, shalt thou still exist, and through thee shall I also receive an eternal existence! Blessed be God, that each revolving month brings me nearer and nearer to this state of bliss!

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FEBRUARY 1.

ADAPTATION OF ALL NATURE TO THE BENEFIT OF MAN.

BE sensible, O man, of the particular love with which God has distinguished thee from many of his creatures. Acknowledge, as thou oughtest, thy superior felicity, in being the peculiar object of divine beneficence, and the centre of all that he has formed for the glorification of his attributes.

For thee all Nature labors on the earth, in the air, and in the waters. For thee the sheep is covered with wool, which otherwise would only be a burden to it. For thee the horse is provided with a hoof, for which he would have no occasion, were he not destined to draw heavy loads, and to climb mountains. For thee the silk-worm weaves her curious web to supply thy wants; and for thee the fly lays her eggs in the water, that for thy advantage they may become the nourishment of the fishes. For thee the bee extracts honey from the juices of the flowers; for thee the ox labors at the plough, and is satisfied with a scanty pittance of coarse provender. For thee the forests, fields, and gardens abound in riches, most of which would otherwise be useless; as would also the treasures with which the bosoms of the mountains are impregnated.

Thou hast, it is true, beyond comparison more wants than the other animals; but hast thou not also incomparably more faculties and inducements to make every thing around thee subservient to thy pleasure and profit? Innumerable objects furnish thee with food, clothing, habitation, and a thou-

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sand conveniencies. By creating thee with many wants, God also conferred on thee the greatest variety of pleasing sensations. It would be impossible for thee to satify thy multifarious wants, were those of other animals equally numerous. That thou mightest enjoy all these comforts and pleasures, and not be exposed to the pressure of want, the animals have been confined within such narrow limits, and such things have in general been assigned them to satisfy their wants as are of no service to man.

But it is not merely in this abundance of food that God has provided for thy comfort and gratification. For thee the lark and the nightingale pour forth their melodious strains; for thee the flowers exhale balsamic odours; for thee the fields and gardens are variegated with a thousand hues. But above all, he has endued thee with reason, by which thou art enabled to make every object subservient to thy support and pleasure, to subdue the huge whale and the ferocious lion, and, what is of still greater importance, to participate in the delight which the Almighty himself takes in his works, and to admire the order, the magnificence, the grandeur, and wonderful connection of all created objects.

O highly favored man! how canst thou be sufficiently grateful to thy heavenly benefactor? What love can be so fervent as in any wise to repay that which he manifests towards thee? But to increase the ardor of thy love and gratitude, reflect often on the peculiar liberality and favor which the Father of the world has shewn to thee; consider that on the face of the earth there is not a creature for whom he has done, and continues to do so much

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as for thee. Cast thine eye around thee over the whole theatre of Nature, let the heavens, the earth, and the sea, let every animal, every plant, every stone often repeat to thee, that thou art the favored object for whose service and use all creation was intended. Thy soul then cannot but be animated with the most lively gratitude and the most fervent love to thy benefactor. Endeavor, therefore, to live entirely to the Lord, who, for thy sake, has given life and being to so many different creatures.

Be this, reader, the resolution that thou formest at the beginning of this month. Thou wilt find daily opportunities of acknowledging the generous care of Providence, manifested in behalf of thy life, thy subsistence, and thy comfort. Taste the bounty of the Lord in every morsel that enters thy lips, in every draught of water that quenches thy thirst. But, above all, cherish a sense of his bounty for the blessings which he has reserved for thee in eternity. For thee, O Christian, he has destined that bliss, which those who love him shall eternally enjoy around his throne. Happy spirits shall be thy companions, and thou shalt partake of that felicity which far surpasses thy utmost conception. What is the happiness of this life, compared to that bliss which awaits us in the kingdom of God! Here on earth, we experience, indeed, many wonders of his goodness; but our pleasures are continually intermingled with pain; there only is perfect happiness to be found.

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FEBRUARY 2.

INFLUENCE OF COLD UPON HEALTH.

In the severe winter months it is not unusual to hear in every house and in every company frequent eulogiums on the other seasons of the year. Spring, Summer, and Autumn, little as they are valued when we are in the actual enjoyment of their blessings, are now prized extravagantly high, when we no longer possess their advantages. This is the general custom of men; as long as they enjoy blessings they never value them as they ought, and it is not till they lose them that they learn to appreciate their worth. But is it true that those seasons exclusively deserve our praise? Is the Winter really, what it is represented, the enemy of our pleasures and the destroyer of our health? As this idea may have considerable influence upon our tranquillity and ease, let us impartially examine the advantages of the present season with respect to our health.

Spring and autumn are dangerous seasons on account of the sudden changes of weather which occur in them. In summer the air is impregnated with putrid vapors, or, at least, such as are disposed to putridity. In this season we are most subject to colds, which superinduce a multitude of painful and fatal diseases. Winter is exempted from all these pernicious effects. Cold promotes the insensible perspiration of the body, and thus prevents a great number of dreadful disorders, which originate in its obstruction. By a moderate perspiration we feel ourselves not only lighter, but more active;

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the blood is purified, the appetite is strengthened, and the spirits are cheered. At the same time the cold braces the solids, and invigorates them exceedingly amidst the want of exercise. What inconveniences does the intense heat of summer produce! How oppressed and relaxed we become if we remain long in the open air, under the burden of the sultry atmosphere! How impatiently do we long for the coolness of night, that it may impart new strength to our bodies! From these inconveniencies the serene days of winter are exempted. We feel more disposed to motion and to pleasure, and an agreeable agility pervades every limb. The cold obliges us to accelerate our movements, that the disagreeable sensation produced by it may be converted into a feeling of warmth, which is so much the more pleasing.

Thus, reader, you have it in your power to promote your health and pleasure, even in winter. In this season, as in every other, your Creator has provided for your well-being, and has made the wisest arrangements for maintaining and encreasing the happiness of his creatures. If you do not enjoy so good health or so much pleasure in winter as in other seasons, it is incontestibly your own fault. Perhaps you pass your time in listless inactivity; perhaps you are constantly shut up in a warm apartment, without ever feeling the bracing cold of the wintry atmosphere. Perhaps your heart is filled with anxious care and solicitude concerning the future; or you exceed the bounds of moderation in eating and drinking; or feel the disagreeable effects of excesses, by which in summer you ruined your health. How happy, how healthy might

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men be, if they followed the laws of Nature, and suffered labor and rest, business and pleasure to succeed each other!

O benign Creator! I acknowledge with gratitude the wise ends of thy government. I bless the paternal care with which thou providest, in all the revolutions of the seasons, for my health, ease, and convenience. Shall I then render a portion of my life painful and disagreeable, when it may be to me a source of the purest pleasure? Shall I wantonly throw away my health and my life, while thou art so assiduously employed to preserve and strengthen both? No; henceforward will I endeavor in all things to further thy beneficent views. A contented mind shall diffuse happiness over my days, while temperance and virtue invigorate my body.

FEBRUARY 3.

AN UNIFORM DEGREE OF HEAT AND COLD WOULD PROVE DISADVANTAGEOUS TO THE EARTH.

We are apt to imagine that our earth would be a paradise, if in all places, and in every region, there were an equal distribution of heat and cold, the same fertility, and the same division of days and nights. Such is the opinion of us short-sighted and selfish mortals; but supposing the earth were formed upon this principle, supposing an equal temperature were diffused over every point of its surface, would the inhabitants procure a more easy subsistence, would they enjoy more conveniencies, more pleasures? So far from this, the earth would be the most dreary and disagreeable abode for

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every creature, had the Almighty formed it according to our ideas. By the present arrangement, there is an infinite diversity among the works of God. But how uniform, how destitute of beauty and perfection the earth would be, if there were no revolution of seasons, no changes of light and darkness, of cold and heat! How many thousand species of plants and animals, which propagate only in countries that have a certain temperature, would be swept from the earth! Among the immense multitude of the productions of Nature, there are few that thrive in every region of the globe. The cold countries are in general inhabited only by such creatures as could not endure the heat of the torrid climes. The latter, on the contrary, contain only such as would infallibly perish in cold regions. With an uniform degree of temperature, the greatest part of the productions of Nature, and consequently that which gives her the greatest beauty and variety, could not possibly exist. What losers we should be by such an arrangement! If every country of the globe yielded the same productions, and possessed the same advantages, there would be no communication, no commerce between them, and many arts and trades would remain unknown. What would become of the sciences, if the nations were not under the necessity of communicating with each other?

Let us, however, suppose, that an equal warmth prevailed over the whole world. Could we determine what the degree of that warmth should be? Were the heat every where so great as in the torrid zone, who could endure it? For, as the colder regions take from the warmer a portion of their heat, the temperature of the whole earth would be

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Disadvantages of uniform heat and cold.

considerably higher than it now is in the torrid zone, if the heat were every where equal. Men, animals, and plants would perish. But supposing there were the same degree of temperate heat over the whole earth, the atmosphere would be every where equally elevated and equally dense. Thus the earth would be deprived of one of the principal causes of winds; and what inexpressible mischief would thence ensue! The air, which is one of the essential requisites for the preservation of human life, would become the most destructive of poisons, were it not purified by the winds. The equality of heat over the earth would very soon generate disease, contagion, and pestilence, and our imaginary paradise would be converted into a dreary desert and a real chaos.

All-wise Creator, thou hast done all things well! This is the result of all the reflections I have made on the arrangement of thy works. I will accustom myself to think thus at the sight of every object which is presented to my view in the kingdom of Nature. Should I, at any time, discover apparent imperfections and defects, I will always call to mind thy wisdom and the weakness of my own understanding. Many things which seem contrary to the order and well-being of the world, are evidently arranged with infinite wisdom and goodness. In that which, to my limited understanding, appears defective, a superior mind discovers the most admirable perfections. And indeed, if I should not always be capable of discerning the wisdom and goodness of God, with respect to the creation and preservation of the universe, it should always satisfy me to know that the Lord doth all things well.

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Such also shall be my judgment in regard to the dealings of God with intelligent beings. As, in Nature, he has not equally distributed heat and cold, light and darkness, so also he has not regulated the lot of each in the same manner. In both cases his ways are the ways of unimpeachable goodness. Even as the globe could not subsist, were an equal degree of heat or cold diffused over it, there could be no happiness in the world, were there a perfect equality in the lot of all human beings. All that the Lord has done is perfect and admirable. His ways are those of goodness and truth to such as keep his covenant and his commandments. To him be glory for ever and ever!

FEBRUARY 4.

UTILITY OF THE STARS.

To all those who take delight in contemplating the works of God, the starry heavens are a glorious theatre of the wonders of the Most High. The order, the magnitude, the multitude, and the splendor of the stars present a most delightful spectacle to an attentive observer of Nature. The mere view of these bodies, even though we had no knowledge of their nature and design, would be sufficient to fill the heart with rapture and admiration. What sight can be more magnificent than that of the heavens illumined with innumerable orbs; each star differing in magnitude and brightness from the others, while the dark azure of the sky augments their brilliancy.

But could that Being, who is infinitely wise, have suspended in the heavens globes of such pro-

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digious magnitude as the stars, solely to gratify the eye? Could he have created these innumerable suns, only that the inhabitants of our little globe might have the pleasure of seeing certain luminous spots in the firmament, which are but seldom noticed, and the nature and design of which are still more rarely considered? It is impossible to entertain such an idea, if we reflect that throughout all Nature the most admirable harmony prevails between the works of God and the purposes for which they were intended; and that, in all he does, he has in view, not only the pleasure, but likewise the profit of his creatures. It cannot, therefore, be doubted, that, in placing the stars in the firmament, the Almighty had far more exalted views than thereby to afford us a pleasing spectacle. We are incapable, it is true, of discovering the particular ends which the stars are designed to answer; but so much, at least, is obvious, that they were intended, not only for the ornament, but for the advantage of the universe. Of this the following considerations will, perhaps, be sufficient to convince us.

Among the stars which are distinguishable from the rest, there are some which constantly remain stationary in the same point over our heads. These are the surest guides, amid the darkness of night, for travellers both by land and sea. From them the mariner learns the time to begin his voyage with the least danger, and to reach in safety the place of his destination. Other stars change their positions; for though they may always appear at the same distance from each other, yet we daily see them rise and set at a different place. These very changes, which are brought about in a certain, in-

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variable order, are of great advantage to mankind. By means of them our time may be divided, and the limits of each period may be accurately determined. The variable, but yet regular motions of the stars, mark with the utmost precision the commencement and the end of each season. From them the husbandman knows the fit time to commit his seed to the ground, and to perform the various operations of agriculture.

Considerable as this advantage may be to the earth, it would, however, appear to be the least important end, and, if we may presume to form such an opinion, not perfectly consistent with the wise designs of the Deity in the creation of so many prodigious globes. Can we imagine that the all-wise Creator would have scattered so many millions of worlds and suns, through immeasurable space, merely for the purpose of announcing the changes of times and seasons to the small number of human beings who inhabit our globe? Assuredly these grand objects must be designed for more important ends. All the stars that glisten in the expanse of heaven cannot but be considered as suns, capable of communicating light, heat, and motion to other globes. Could God have conferred this property for no purpose on the stars, which even dart their rays to the earth, without producing other worlds to enjoy their benign influence? Would he who has replenished our globe, which is but a speck, with living creatures,—would he have constructed so many desart spheres in boundless space? Certainly not. Perhaps each of these millions of stars has its worlds, for which it was created. Perhaps each of these orbs is inhabited, like our earth, by creatures endowed with the faculty of admiring the

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magnificent works of the Lord? Perhaps prayers and songs of praise ascend also from them to our common Creator.

These, it is true, are only probable conjectures; but in every heart that loves God, these conjectures must excite joy and transport. What a sublime thought it is, that independently of the small number of rational beings inhabiting our globe, there are innumerable multitudes in those worlds, which to us appear but as points. The limits of our earth are by no means the bounds of the empire of God. Beyond this world extends infinite space; in comparison of which, this terrestrial creation, great as it may appear, dwindles to nothing. Intelligent beings without number exist there; all magnify the name of our great Creator, all are as happy as their situations admit, and all, perhaps, aspire after a better world.

With you, my yet unknown fellow-creatures, I also aspire to that better world, where I shall know God and his works, not from conjectures, but the deepest conviction. Then shall I be nearer to those immense bodies, of which, in this state of distance and ignorance, I can have but a very imperfect knowledge. Then shall I possess the power to soar from one planet, from one fixed star to another, and to adore the Most High. O that this blessed moment were already arrived!

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FEBRUARY 5.

WONDERFUL STRUCTURE OF THE EYE.

THE eye infinitely surpasses all the productions of human art. Its structure is the most astonishing that can possibly be conceived by the human understanding. The most skilful artist cannot invent a machine of this nature, but what must be extremely inferior in every respect to the eye. Let his dexterity and ingenuity be ever so great, he can produce nothing but what must have those imperfections which are common to all human contrivances of this description. We cannot, indeed, discover all the art which divine wisdom has employed in the structure of the eye; but the little we know is sufficient to convince us of the infinite wisdom, power, and goodness of our Creator. Let us avail ourselves of this knowledge, though imperfect, to glorify the name of the Most High.

In the first place, the conformation of the external parts of the eye is truly admirable. What fortifications and defences has the Creator provided for the protection of the eyes. They are placed at a certain depth in the head, and are encompassed with bones of such strength that they cannot easily be injured. The eye-brows contribute much to the security and preservation of the eyes. The hairs which form an arch above the eye, serve, not only to prevent the particles of dust and such like matters from falling into it, but likewise the drops of sweat that might run down from the forehead. The eyelids are another defence, and at the same time they favor sleep, closing as soon as its influence steals upon us. The eyelashes conduce great-

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ly to the perfection of the eye. They serve partly to moderate too strong a light, admitting only such a portion of rays as the eye is capable of enduring, partly to catch the minutest atoms of dust, by which the organ might be injured.

The internal structure of the eye is still more astonishing. The whole eye is composed of certain tunics, humors, muscles, and vessels. The external tunic, which is denominated the *cornea*, is transparent, and so hard, that it is able to withstand very violent shocks. Behind this is another tunic of a circular form, and colored. This is called the *uvea*. In the centre of it is a round aperture, which is termed the *pupil*, and which appears to be black. Behind this aperture is a body, which has the form of a burning-glass, perfectly transparent, and called the *crystalline lens*. Under the crystalline is a cavity filled with a gelatinous, but perfectly transparent fluid, which, from its supposed resemblance to melted glass, has been denominated the *vitreous humor*. The anterior cavity between the cornea and the crystalline, contains a humor thin as water, which may be renewed, if through any injury it should be discharged. The eye is suspended by six muscles, which move it in every direction. But the most wonderful thing is the *retina*, with which the posterior part of the eye is covered. This membrane is a net-work composed of the most delicate nervous fibres, attached to a large nerve that communicates with the brain, and is called, the *optic nerve*. On the retina all objects are painted to the life, and though they are represented in an inverted position, they are nevertheless seen in their real situation. We may form an idea of the extreme minuteness of this picture,

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when we reflect that the space of half a mile, or more than eight hundred yards, painted on the bottom of the eye, occupies no more than the tenth part of an inch.*

I thank thee, O Lord my God, for having formed my eye in so wonderful a manner. In the whole structure of this part of my body, my soul acknowledges thy infinite wisdom, power, and goodness. Hitherto I have not considered this organ as it ought to be considered, as a master-piece of thy hand, and as a convincing proof, that not even the minutest portion of my body is the work of chance, or was formed by thee without some particular object and design. But now that I begin to obtain a

* Dr. Paley enlarges on this subject in the following observations:

"In considering vision," says he, "as achieved by the means of an image formed at the bottom of the eye, we can never reflect without wonder upon the smallness, yet correctness of the picture, the subtilty of the touch, the fineness of the lines. A landscape of five or six square leagues is brought into a space of half an inch diameter; yet the multitude of objects which it contains are all preserved; are all discriminated in their magnitudes, positions, figures, and colors. The prospect from Hampstead Hill is compressed into the compass of a sixpence, yet circumstantially represented. A stage-coach, travelling at its ordinary speed for half an hour, passes in the eye over only one twelfth of an inch, yet is this change of place in the image distinctly perceived throughout its whole progress; for it is only by means of that perception that the motion of the coach itself is made sensible to the eye. If any thing can abate our admiration of the smallness of the visual tablet, compared with the extent of vision, it is a reflection which the view of nature leads us every hour to make, namely, that, in the hands of the Creator, great and little are nothing.

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glimpse of the wonders of thy wisdom, I am struck with astonishment when I consider myself, and still more when I contemplate thy works, Creator almighty and all-wise! Forgive my weakness, if heretofore I have used my eyes without thinking of thee, or at least without feeling the most lively gratitude for the inestimable blessing of sight. Of how many agreeable sensations should I have been deprived, if I had been born without it! How necessary, nay, how indispensable is it to my existence! Without sight, I should neither be able to avoid the dangers with which I am surrounded, nor to perceive such things as are needful or agreeable. By this privation I should not, indeed, be rendered wholly insensible, but, what is far more terrible, I should scarcely ever be free from painful sensations, when I reflected that there were others which I could never hope to feel. O my God, how grateful ought I to be for this blessing! Incline me to be more thankful for this benefit, and to glorify thee by the use of my eyes. Teach me to employ them for no other purposes than those for which they were given me, that this masterpiece of ingenuity may not be prophaned or dishonored by my abuse of it. Cause me often to use them to contemplate thy works, and whenever I survey the heavens, the earth, or myself, may I be excited to praise the wonders of thy goodness. And when I see the different distresses under which a great number of my fellow-creatures groan, let not my eye refuse a tear, or my heart be shut against compassion. But let my eyes overflow with joy whenever I receive a new mark of thy favor, or when I am so fortunate as to relieve the distresses

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of the indigent, or to dry the tears of the afflicted. Thus shall I accomplish the designs of thy goodness, and obtain the approbation of my God.

FEBRUARY 6.

OF FOGS.

Among the meteors which so frequently appear in winter, that called fog is particularly worthy of attention. It is nothing but a collection of aqueous vapors, which fill the lower regions of the atmosphere, and are condensed in it, but are yet too light to descend suddenly to the earth. This condensation is principally caused by the cold; hence it is necessary for the formation of fogs, that the air should be considerably colder than the earth, from which exhalations are continually rising. Hence fogs are most frequent near extensive waters and great cataracts. Spring and autumn are the seasons in which they are most common; in spring, because the surface of the earth still retains a portion of the winter's cold, and the vapors are therefore condensed in its vicinity; in autumn, on account of the abundant exhalations, the particles of which are soon condensed by the coldness of the atmosphere. Fogs not only dispense a mild humidity to the earth, but also furnish a pleasing spectacle to the eye. Every object, both far and near, is enveloped in a grey curtain, whose uniform shade veils both the heavens and the earth. Far above our heads we see nothing but obscurity, and the eye wanders from side to side, without being able to distinguish objects. The sun, after his

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rising, long labors to disperse the fog, and to restore to the earth its former appearance. At length he succeeds in dissipating these vapors. Sometimes they descend to the ground; sometimes they rise into the air. Objects gradually emerge from their uniform obscurity, and appear in their usual form. The heavens regain all their wonted serenity, and it is only on the roofs of the houses, or on the earth, that we can discover any traces of the fog which hovered for several hours over its surface.

This meteor reminds me of those times when the sciences were enveloped in the impenetrable mists of superstition and ignorance. What thick darkness rested on whole provinces and kingdoms before the sun of truth diffused his splendor. The sphere of the human mind was so limited, that it remained a stranger even to objects which were the nearest to it; and the power of error was such that not a ray of light could penetrate the gloom of prejudice and superstition which darkened the soul. The sun at length burst forth, and suddenly illumined regions, buried for ages in the deepest shade. We were enabled to distinguish truth from error, and the prospect of a blissful eternity was opened to our view. This, under God, was thy work, venerated Luther—name ever memorable and ever dear!

Still, however, we continue to walk in darkness and obscurity as long as we are pilgrims on this earth. Impenetrable mists surround us, and obstruct the prospect of futurity; while our ignorance, our prejudices, and our unbelief augment the darkness of our present state. O may they soon be dissipated. May the light of truth and joy illumine my course through this valley of darkness.

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But, blessed be God, through the shades that surround me I discover a path which leads to everlasting life. Soon shall all mists be dispelled from my eyes, and I shall dwell in the regions of light and felicity, where no shade shall ever obstruct my view. There shall I clearly discern what on earth appeared obscure; there shall I discover the wisdom and the holiness of the ways of Providence, which here seemed utterly incomprehensible; there my soul shall with gratitude and admiration perceive the connection and harmony which pervade the works of the Most High.

FEBRUARY 7.

OF THE TIDES.

THE greatest part of the surface of the earth is covered with water, which is called the ocean. This prodigious mass of water differs materially from rivers and lakes. These contain more or less water, according to the seasons; the ocean, on the contrary, always contains nearly the same quantity. It is, however, observed, that the ocean regularly ebbs and flows twice a day. When the sea is at its greatest height in any place, it soon begins to fall. This decrease continues six hours, at the end of which the sea is in its lowest state. It then begins to rise, and increases for six hours more, when it again attains its greatest height. It then falls for the next six hours, and returns in the same space of time; so that in twenty-four hours, it twice ebbs and flows, and alternately reaches its highest and its lowest elevation. This alternate increase and decrease of the sea is called ebb and flood. The

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time of flood is that in which the water rises, and the time of ebb is the interval in which it falls. The most remarkable circumstance is, that these tides are regulated according to the course of the moon. At the full and new moon the motion is stronger than in the quarters; it is more violent in spring and autumn than in the other seasons, and is weakest at the solstices. This phenomenon is particularly remarkable in the ocean, whose waters occupy an immense space; on the contrary, in inland seas, such as the Mediterranean, the tides are not considerable. The interval between ebb and flood is not exactly six hours, but eleven minutes more, so that these changes do not take place the following day at the same hour, but three quarters of an hour later. They do not return at the same hour till at the end of thirty days, which is precisely the time from one new moon to another.

From the regularity of this phenomenon we may with certainty conclude, that the tides have a connection with the changes of the moon. But, without attempting to investigate the particular cause of this effect, in which there is still much obscurity; without pretending to determine whether the ebb and flood are occasioned by the moon's pressure upon the earth, or by the pressure of our globe upon the moon, let us reflect, my brethren, on the purposes for which God has designed these remarkable revolutions. It is a pardonable ignorance if we are unable fully to fathom the laws and revolutions of Nature; but it bespeaks inexcusable inattention and ingratitude to disregard the beneficial influence of the most important natural phenomena on the well-being of our earth, or to forget

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how much we owe to the Almighty Father of Nature.

The first advantage afforded by the flood is, that it repels the water in rivers, so as to make them sufficiently deep to carry heavy objects into the heart of great cities, whither they could never be conveyed without this assistance. Vessels wait some time for this increase of the water, and avail themselves of it to enter road-steads without touching the bottom, or to sail up rivers without danger. Having performed this important service, the tide diminishes, the river recedes from its shores, and facilitates the return of other vessels.

A second advantage resulting from the continual motion of the water is, that it prevents stagnation, by which it would be rendered insalubrious, or even putrid. To this end the winds, indeed, contribute; but as a dead calm often prevails at sea, putrefaction might take place in the basin of the ocean, which is the general receptacle of all the impurities of the earth. God has therefore established the tides to prevent pernicious accumulations in the waters, whose alternate motion separates the particles of putrid bodies. And the more effectually to keep the sea pure, the ebb and flood mingle and disperse the salt, with which its waters are impregnated, and which would otherwise sink to the bottom.

These reflections naturally recal to our minds a circumstance which bears a great resemblance to this natural phenomenon. Life itself is but an ebb and flood, a continual rise and fall. Every thing is inconstant and liable to change. No happiness, joy, or hope is of any duration. We float down

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the current of uncertainty; let us, therefore, take heed that we be not precipitated into an abyss, but that we land in safety on a flowery shore. Let us thank God that our troubles and afflictions cannot be of long duration. Long and excessive grief is as incompatible with our nature as perfect and invariable felicity; but even these changes are attended with incontestible advantages. Were we to enjoy uninterrupted felicity through life, we might easily forget God, and become inflated with vanity and pride. On the other hand, an uninterrupted succession of afflictions might plunge us into melancholy and harden our hearts. Let us, then, praise our heavenly Father for this wise arrangement, and let us in all cases, in prosperity as well as in adversity, endeavor to walk worthy of our vocation, and of the hope of eternal life.

FEBRUARY 8.

OF THE VARIED ASPECT OF THE HEAVENS.

The sky is not always covered with clouds that pour forth snow or rain. Sometimes the clouds divide, after they have discharged their copious store of water, and the most delightful serenity pervades the whole face of heaven. The aspect of the sun, concealed for several days by dark clouds, reanimates all creatures, and fills them with joy and gladness. During the days of summer we are accustomed to his presence, but as in winter he visits us more rarely, and then only for a few hours, we learn to prize his influence more highly. And, reader, will not the same observation apply to all the other gifts we receive from the hand of the

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Almighty? How seldom do we duly appreciate the blessings of this life; with what indifference do we often regard them, when they are constantly in our possession? Health, tranquillity, friendship, competence, and a thousand other blessings which we daily enjoy, appear of far less consequence than they really are; and very often we are not sensible of their worth till we have lost them. It is not before we are extended on the bed of sickness, or are deserted by all our friends, or are reduced to poverty and want, that we discover the value of health, of a faithful friend, or of the means of obtaining a decent subsistence.

Though the sky may be cleared of the clouds which have long obscured it, yet the earth still exhibits a gloomy appearance. It is a little cheered, to be sure, by the rays of the sun, but he has not yet sufficient strength to overcome the cold which has frozen the earth, or to awaken Nature from the apparent slumber of death. In like manner, the brilliant rays of the understanding do not always warm the heart. And here let me think of you, my unfortunate and afflicted brethren! How often do ye, in the winter of life, or in other distressing circumstances that befal you, discover joy only at a distance, without being able to taste its sweets, or to invigorate yourselves by its participation. Nevertheless, you owe thanks to your heavenly benefactor for these rays of comfort, which sometimes cheer your hearts, and soothe your cares, though but for a short interval. O my God! I implore thee to grant me but this favor. Should it be thy pleasure to assign me in my old age some dark and melancholy hours, grant that I may not murmur at thy dispensation, but let a ray of joy from time to

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time penetrate my gloomy soul, and let me have a glimpse of that happiness which awaits me in eternity. Grant me, at times, but a few tranquil moments, then will I most cheerfully bear the cloudy days of adversity!

How inconstant is the aspect of the heavens in this season! How little can we rely on the continuance of the cheering rays of the sun! Now he beams forth in mild majesty, but soon will he be covered with watery clouds, and before noon arrives, we shall see no more of the splendor which he diffused in the morning upon the earth. Of the same variable nature are all the scenes of our life. We can never promise ourselves permanent joy or uninterrupted felicity. So much the more cautious should we be in the days of prosperity, and never indulge an inordinate love of earthly good.

FEBRUARY 9.

EARTHQUAKES.

OUR globe is subject to two kinds of earthquakes, both of which originate in the action of subterraneous fire. Those of the first kind are felt only in the vicinity of volcanoes, either during or just before an eruption. No sooner have the matters by which the subterraneous fire is produced, begun to ferment and to become inflamed, than the fire seeks a vent on every side, and if it finds no natural egress, it raises the earth and forces a passage. These earthquakes, however, extend only to the distance of a few miles. They shake the earth in the same manner as the explosion of a powder magazine pro-

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duces a concussion that is felt at a considerable distance.

The other species of earthquakes is very different in its effects. I allude to those tremendous shocks which are felt at an immense distance, and convulse extensive tracts, though no signs of a volcanic or other eruption make their appearance. We have examples of earthquakes which have been felt in England, France, and Germany at the same time. These extend much more in longitude than latitude;* they shake a region of the globe with greater or less violence in several places, and are almost always accompanied by a rumbling noise, like that of a waggon running with great rapidity.

To give some idea of the causes of this species of earthquake, we shall make the following observations. All inflammable substances produce a great quantity of air, in the same manner as exploded gunpowder. This air, generated by fire, is so highly rarefied as to be productive of the most violent effects, when it has been long compressed in the bosom of the earth. If then, at a considerable depth, as one or two hundred fathoms, there should be sulphureous or other combustible substances, which begin to take fire by the accession

* On the 1st of November, 1755, so fatal to Lisbon, the island of Madeira was violently shaken by an earthquake, accompanied with subterraneous explosions. The same convulsion was felt as far northward as Scotland, where it was observed that the ground had an undulatory motion from south to north. All the lakes that lay in that direction were much agitated, while those which extended from east to west were much less affected. T.

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of air or water, they must necessarily seek for vents, and if they find none, they will occasion the most violent convulsions.*

It is not in the power of language to give an adequate description of the horrors with which these earthquakes are attended. Of all the calamities which occasionally visit our globe, none is so tremendous, none is accompanied with such universal desolation, none so effectually baffles all human foresight and precaution, as earthquakes. When rivers, bursting their banks, inundate whole provinces, and sweep away towns and villages in their course, still the unfortunate inhabitants have some resource; they may escape to the mountains, or oppose dykes to the fury of the floods; but in earthquakes these expedients are either impracticable or unavailing. There is scarcely any other danger which may not be avoided. Lightnings have never consumed whole regions and towns. The plague may, indeed, depopulate cities, but not utterly destroy them; but the calamity of which we are speaking extends with irresistible power over whole provinces, sweeping away nations and kingdoms without leaving a vestige of their existence.†

* Some writers have ascribed earthquakes to the expansive force of steam, generated by the action of water upon pyrites, or other substances of a like nature. This is supposed to force its way between the strata of earth, as it is natural to imagine that a freer passage is afforded in that direction than perpendicularly through them; and thus the undulatory but sometimes violent motion which constitutes an earthquake is occasioned. T.

† To give a more precise idea of the dreadful effects of these convulsions, it may be sufficient to state the following facts:—On the 1st of November, 1755, the city of Lisbon

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O Lord, almighty God! who is able to stand before thee when thou displayest thy power? Who can endure thy wrath when thou risest to judge the nations? The earth trembles and is convulsed, the foundations of the mountains are shaken when thy anger is kindled. "The mountains quake at him, and the hills melt, and the earth is burnt at his presence; yea, the world and all that is therein. Who can stand before his indignation, and who can abide in the fierceness of his anger? His fury is poured

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was totally destroyed by an earthquake. The total number of persons who perished on this occasion was calculated to exceed sixty thousand. In 1783, the two Calabrias, in the kingdom of Naples, with part of Sicily, were doomed to be a scene of the most tremendous and fatal earthquakes, which buried cities, towns, and villages in one promiscuous ruin. Mountains were detached from their foundations, and carried to a considerable distance. Rivers disappeared from their beds, and again returning, overflowed the adjacent country. An inhabitant of Casal Nuova, which, with four thousand human beings, was swallowed up in an instant, happening to be on the summit of a hill at the moment of the shock, and looking earnestly back to the residence of his family, could see no other remains of it than a white cloud, which proceeded from the ruins of the houses. At Scylla, the inhabitants escaped from their houses to the celebrated rock of that name, and, with their prince, descended to a little harbour at the foot of the hill. In the night, a stupendous wave, which is said to have been driven three miles over land, on its return swept away the unfortunate prince, with two thousand four hundred and seventy-three of his subjects. It is computed that not less than forty thousand persons perished by this earthquake.—A repetition of these dreadful scenes took place in the southern provinces of the Italian peninsula, on the 26th of July, 1805. Upwards of seventeen thousand persons were buried under the ruins of their habitations, and the number of the wounded was much greater. T.

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out like fire, and the rocks are thrown down by him."* Who can help fearing thee, thou sovereign of the earth? Yes, Lord, we acknowledge thy tremendous majesty. Incomprehensible are thy judgments, but merciful art thou in all thy dispensations.

Of this truth seek, O my soul, to obtain a thorough conviction. Even when the Lord pours forth his judgments upon the earth, when he consumes whole countries by the flame of his wrath, his dealings with his creatures are those of wisdom and goodness. Or canst thou imagine that he decrees these convulsions for the purpose of destroying thee? Canst thou—whom a breath would be sufficient to annihilate—canst thou suppose that to crush thee he would have occasion to summon all the elements and all the powers of Nature to his aid? Rather acknowledge that these calamities are designed for more important ends. God renders even earthquakes subservient to the preservation of the whole. If, then, villages, towns, and provinces are buried under their ruins, if some thousands of God's creatures are swept from the face of the earth, what are ten thousand provinces, or one hundred thousand human beings, in comparison of the universe, or of the innumerable multitude of beings inhabiting the vast empire of the creation. You may rest assured that whatever is terrible in nature, all the apparent evils and imperfections of the world are necessary for the preservation of the whole, and consequently for the manifestation of the glory of God.

* Nahum, i. 5, 6.

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O omnipotent Being, I will adore thee, even when thou scatterest terror and desolation upon the earth. Nay, I may do still more; I may repose with perfect confidence on thy paternal care. Should the mountains be engulphed in the ocean and the earth be hurled into destruction, still thou shalt be my reliance and my strength. Thou art my help in every affliction that can befal me. Let me only possess a good conscience, and I shall find nothing terrible in nature, though all around me quake for fear. If the earth sink beneath my feet, if the fabric of the universe be dissolved, still may I joyfully exclaim, that it is the hand of God himself which supports me.

FEBRUARY 10.

ORDINATION OF GOD WITH RESPECT TO THE LIFE AND DEATH OF MAN.

GOD observes the most exact and wonderful order with respect to the life and death of man. So far are they from depending on accident, that, on the contrary, every circumstance is regulated in the wisest manner. If we take the average of several years, we find that a proportionate number of persons die at every period of life. Out of thirty-five or thirty-six, only one is annually carried off by death. On the other hand, the number of births always exceeds that of deaths, in the proportion of twelve to ten. God likewise displays particular wisdom in the different ages of persons who die. In the first years of infancy, in general, one child dies out of three or four; in the fifth year, one out of twenty-five; in the seventh, one out of fifty;

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in the tenth, one out of one hundred; in the fourteenth and fifteenth, one out of two hundred. The twentieth year is nearly equal to the fourteenth; but after the twenty-fifth the mortality increases. In the thirtieth year one dies out of sixty; in the thirty-fifth, one out of fifty. How admirably doth God manifest his wisdom and goodness in thus sparing men most in the years of their youth! And yet in what exact proportions doth he remove men out of the world. Among a thousand deaths, there is always nearly the same number of persons of twenty, fifty, sixty, eighty years. It is true that the manner of living of men, their vices, wars, and epidemic diseases may sweep away more in some years than in others; but the divine Providence takes care that in the following years, not only the excessive mortality be checked, but also that the loss of the species be abundantly supplied. Again, all the seasons are not equally dangerous to human life. The spring makes the greatest ravages, and the delightful May, when all Nature begins to revive, is more destructive than March and April. But in June, the increase of heat operates as a check to disease. The summer and autumn are more favorable to health than winter.

Admire with me, O Christian, the tender providence of God with respect to human life. There is not a beggar, however mean, not an infant at the breast, the number of whose days and years is not written in the book of the Most High. How contented ought we to be, as not only the time of our birth, but also that of our death, is so accurately determined! How easy it is for us to overcome the excessive fear of death! The Lord has undoubtedly fixed the duration of our life and the

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period of our death in such a manner that both shall contribute to our advantage and felicity. If we have the comfortable assurance that we have found favor with God through Christ Jesus, we may likewise be certain that we shall not be removed from this world, till the Lord has conducted us to that degree of piety which he designed us to attain. Misled by self-love, we are often ready to imagine, at the approach of death, that God treats us with too great severity in calling us so early from the theatre of the world: but we may rest assured that, however premature the period of our death may appear, it takes place at the very moment which is most advantageous, not only for ourselves, but also for the rest of created beings.

But, reader, you may perhaps suppose that this wise ordination of the Deity authorizes you to expect a certain measure of years. It is true, indeed, that fewer persons die in their fifteenth than in their third year; but if in a small place only five young persons annually die, how can you be sure that you shall not be the first or the last, or that, when you have passed your fifteenth year, death shall not snatch you away in the sixteenth? Ought not this circumstance to excite you to accomplish the work which has been assigned you in those years, when the continuance of your life is most probable, because it is uncertain whether you will be able to commence, to say nothing of completing it, in those when the mortality is so much greater? Still less should you have the folly to rely upon the length of life. It is in the most vigorous years of manhood, from the fortieth till about the sixty-fifth, that the harvest of death is most abundant. It is before we know what life is, at the very moment

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when we have formed the most specious plans for a long and happy life, that death surprizes us in the midst of our projects and of our hopes.

O Christian, how prudently will you act, if you daily prepare yourself to die! God, in his wisdom, has decreed that each day thirty thousand persons should be removed out of the world by death. How possible it is that you may be one of the number! Are you not convinced, then, of the necessity of meditating daily on your end, and of preparing yourself for that event? Yes, my brethren, be this our common occupation. Let us betimes accustom ourselves to it: then may death appear at whatever hour it shall please the Lord to appoint; we shall meet him with hearts overflowing with gratitude and praise to God, and to our redeemer Jesus Christ.

FEBRUARY 11.

REFLECTIONS ON ICE.

WATER condensed by cold, is gradually transformed into a solid body, which we call ice. This change, which in the present season daily takes place before our eyes, deserves our attentive observation. It is, at least, worth while to make ourselves acquainted with some of the phenomena which frozen water exhibits.

Ice is a body much lighter than water; for if you remove frozen water into a temperate warmth, till it becomes detached from the sides of the vessel, you may clearly perceive that the ice floats upon the water, while, on the contrary, if it were heavier, it must inevitably sink to the bottom. The

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lightness of ice is occasioned by its expansion; for though the water is rendered more solid by the cold, it nevertheless dilates considerably when it is transformed into ice. This expansion is so powerful that ice is capable of bursting a copper globe, for which a force of nearly twenty-eight thousand pounds would be required.*

The first crust of ice that is formed on the surface of the water is perfectly transparent; when it grows thicker, it becomes opaque. This opacity is occasioned by the air-bubbles, large and small, which collect in the ice, and produce a more frequent refraction of the rays of light. The evaporation of ice is considerable, even in the most intense cold. Repeated experiments have proved, that in the severest cold, four pounds of water lose one pound by evaporation in eighteen days; and

* An experiment of this kind is described by the celebrated Muschenbroek, in which a ball of iron, an inch thick, was burst asunder in the course of twelve hours by the expansive power of frost. That philosopher having calculated the power which must have been exerted, found it equal to a force capable of raising a weight of 27,720 pounds. Another experiment made by the academicians of Florence shews that the expansive power of freezing water has certain limits. A brass globe filled with water, and closed by a well-fitted screw, was immersed in freezing water, but did not burst. So much of the metal was then pared off as left the sides of the globe unable to resist the expansion of the water. The force required to burst the globe in this state was computed at 27,000 pounds. In countries where very severe cold prevails, the sap of trees is congealed, and their trunks are burst asunder with a noise like that of cannon. It cannot, therefore, appear surprizing that vessels containing water should be burst when exposed to the action of frost. T.

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that a piece of ice, weighing half an ounce, under the same circumstances, loses four grains in twenty-four hours.

The manner in which ice is formed is exceedingly remarkable. It takes place in the following manner: When it freezes slowly, you see a multitude of fibres shooting from the sides of the vessel containing the water; these join each other at different angles, and form a very thin pellicle on the surface of the liquid. The number of these fibres keeps continually increasing; by their junction they form thin cakes, which at last are united to the former pellicle. The thicker the ice becomes, the more numerous are the air bubbles; and the more intense the cold is, so much the larger they are. Thus the transparency of the ice, especially in the middle, is diminished; it then expands with violence, and occupies a greater space. When the cold is more severe, and the water freezes more rapidly, a thin pellicle is formed on the surface, and quickly extends from the sides to the centre. Under these arise triangular spiculæ, whose base rests upon the side of the vessel, and whose points are consequently turned toward the centre. In this manner the thickness of the crust of ice is augmented; it contains air-bubbles, becomes opaque, expands and grows lighter, as in the case which has already been described.

But, my dear reader, what think you of these phenomena? The most natural idea certainly is: "What order and what harmony exist, even in the meanest of nature's works! How exactly has God weighed, and measured, and adapted all things to the seasons! How every thing in Nature concurs in accomplishing his designs!" But if we could

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distinctly discover the wise ends which the Almighty proposes to answer by each phenomenon of nature, how much greater would be our rapture and admiration! Let, however, that little which we actually know, excite us to magnify our all-wise Creator.

FEBRUARY 12.

OF THE SPHERICAL FIGURE OF THE EARTH.

IGNORANT people are apt to imagine that the earth is a round, flat body, resembling a trencher; but were this the case, as, from its great extent, it appears to be to the human eye, the utmost limits of this surface would be found somewhere, and on approaching a country or place we should not discover the tops of mountains, steeples, and other buildings, before we could perceive the lower parts of those objects. The earth is incontestibly a globe, but its figure is not perfectly spherical, as it projects a little under the equator, and is somewhat flattened at the poles like an orange. This deviation, which does not exceed fifty miles, is scarcely perceptible in a globe whose circumference is 25,020, and diameter 7964 miles. But its spherical figure is proved beyond the possibility of doubt by this circumstance, that the shadow which it throws upon the moon, in eclipses of that luminary, is always circular. Were not the earth round, how could it have been circumnavigated? And how could the stars rise and set sooner in the regions of the east than in those of the west?

In this arrangement also is manifested the wisdom of our Creator. The figure which he has as-

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signed to the earth is such as to render it the most convenient abode for the creatures by which it is inhabited. Light and heat, those essential requisites for the preservation of human beings, are by these means distributed in equal measure over the whole earth. The variations of day and night, of warm and cold, of wet and dry, are continued without interruption. The waters are dispensed in proportionable quantity to the whole surface of the globe, and the winds exercise their beneficial influence in every part of the earth. Of all these advantages should we be deprived if the earth had any other figure. In some regions it would be a paradise, in others a chaos. This portion would be inundated by the ocean, and that would be burned up by the heat of the sun. Some countries would be desolated by hurricanes, while others would be almost totally deprived of the access of air. One part of the earth would enjoy the genial influence of the sun, while another would be covered with everlasting ice.

What pride and what ignorance should we betray, were we not in this dispensation to acknowledge the hand of an all-wise and all-beneficent Creator! And should we deserve to be inhabitants of an earth, constructed with such wisdom, were we, like brutes, to behold with inattention it sad-mirable order, and to enjoy with insensibility the innumerable blessings we derive from it? No, my God and my Creator! I will raise myself towards thee; I am struck with astonishment at thy works; I adore thy wisdom. My weakness permits me not to do more. O! how ardently I wish that I were able to praise thee with angelic fervor, to contemplate thy works with a more enlightened under-

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standing, and to deduce from them just conclusions concerning the purposes for which they were designed. Nevertheless, I know that thou deignest to approve my feeble endeavors to glorify thee, my limited but upright researches, my imperfect but sincere gratitude. One moment passed in the blissful abodes of a future world, will give me more knowledge than an age spent in this. With what transport do I look forward to this change! O Lord, with what impatience do I await the arrival of that time, when I shall contemplate thy works at a less distance than at present, when I shall behold thy face to all eternity!

FEBRUARY 13.

SHORT DURATION OF SNOW.

You observe, reader, the transitory nature of snow, how suddenly the rays of the sun, a warm wind, or the action of rain sweep it from the face of the earth. The aspect of all nature is frequently changed in the course of a few hours, and though the snow before covered the fields, the villages, and the roads, scarcely a vestige of it remains.

Ought not this speedy change to direct your attention to the vanity of all terrestrial things! Assuredly Nature does not present to you, without reason these transitory objects. In all the seasons, and in all the variations occasioned by their revolution, she emphatically proclaims this truth:—*All is vanity.* Survey the whole theatre of earthly objects; where is any thing that is not fleeting? How swiftly the pleasures of sense pass away! They are gone almost before we have begun to en-

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joy them. How often in the morning are we cheerful and happy, and before night overwhelmed with affliction and distress!—And, reader, have you not, in the course of your life, frequently experienced how transient are all earthly goods! The riches of which we are so proud, often take wing, like the eagle, and abandon their possessor at the very moment when he promised himself their peaceful and uninterrupted enjoyment. The transition from the greatest opulence to extreme wretchedness is frequently as sudden, as instantaneous as the succession of thaw to the most intense frost. Nor would this be so distressing, were not health, and even life itself, as fleeting as all other sublunary things.

Unfortunately, these reflections seldom make much impression upon us, as long as we are in the possession of earthly goods. We are like those persons who venture abroad on a serene winter's morning, without bestowing a thought on the sudden changes of weather, which are so common during that season. When fortune and pleasure smile upon us, we imagine ourselves perfectly secure, and reflect not how speedily all these fair prospects may vanish. And, supposing you have not yet had occasion to learn this truth from melancholy experience, yet a time will certainly arrive when you will be convinced of the instability of earthly things. Perhaps you may still be in the spring or summer of your life—but how soon will winter overtake you! Then will you learn how fleeting are all those advantages in which you place such reliance. You will find that all pleasures are like snow, which, indeed, dazzles the eye, but which is soon dissolved, and is no more.

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But there is another important reflection, which the transient nature of snow may give you occasion to make. Let it remind you of your imbecility. What could all the ingenuity and all the power of men effect towards clearing the earth of snow and ice? And yet, how easy is the task to God! He speaks, and instantly the snow and the ice are dissolved; he directs his winds to blow, and a thaw succeeds. Can it be possible that this God, who can perform such great things in nature, should not be able to manifest equal power in regulating the lot of mortals? He needs only to speak, and all our misery is converted into joy.

FEBRUARY 14.

EPITOME OF THE CREATION.

THERE was a time when our earth and the heavenly bodies had no existence. God willed that they should be, and his almighty power produced the heavens and the earth. The universe was yet a confused and shapeless mass, which is generally denominated chaos. It comprehended the matter for all created beings, which required only to be developed. On the first day of the creation God gave motion to this crude mass, and separated the particles of light from those of darkness, but without forming distinct bodies out of those two matters. The light he called day, and the darkness night. Hitherto the fluid and solid bodies had been confusedly intermingled. God separated them from each other; he caused the waters of our atmosphere to be collected, to rise in vapors, and to be condensed into clouds. Hence arose the firmament,

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which is called the sky. These were the works of God on the second day. The waters still covered the face of the earth; God devoted the third day to separate them from it. The waters assembled in different reservoirs, while mountains, valleys, meadows, and forests appeared upon the dry land. Each tree and each plant produced fruit. All the vegetables contained in their bosoms the seed necessary for the propagation of their kinds. On the fourth day God resolved to create out of the mass of light, which on the first day was separated from the darkness, certain planets which should mark the distinction between day and night, and indicate the change of the seasons. Then appeared the sun, by whose genial heat the earth is warmed and rendered fruitful, and which gives light during the day. The moon he formed of another portion of chaos, which was composed of a darker matter. The earth as yet contained nothing but inanimate objects. The fifth day God employed in giving existence to a portion of living creatures. He filled the waters with fishes of different species and dimensions, and gave them bodies adapted to the element in which they were to live. He replenished the air with birds of every kind. In all these animals he implanted the instinct to multiply their species, and to fill the water and the air. Nothing now remained to be done but to people the earth with living creatures. These God resolved to create on the sixth day. From the earth he formed a multitude of animals, wild and tame, partly to assist man in the labors of agriculture, and partly to contribute toward his subsistence. He then created all kinds of insects and reptiles, and all of them when they proceeded from his hand were at their

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full and perfect growth. It was now time to introduce into the world man, who was to be the lord of this creation. He, therefore, formed the first man, and as a being belonging both to the corporeal and to the spiritual world, he gave him not only a body, which he moulded out of a clod, but also a soul endued with reason. From one of Adam's ribs, while he slept, he created woman, and presented her to him as a companion. These two beings, with whom God terminated the work of creation, were the most exquisite masterpieces of the divine power and wisdom.

Canst thou, reader, reflect on this history without being struck with astonishment at the infinite power, unfathomable intelligence, and inscrutable wisdom which are universally manifested in the works of the creation? Which way soever thou turnest thine eyes on the great theatre of the world, thou every where perceivest the mark of an almighty hand, whose power is beyond compare. The heavens proclaim his glory, and the firmament announces his handy-work. All the creatures that exist are proofs of his adorable perfections; they are the very impress and image of them. Thou canst not be a worthy inhabitant of this immense universe unless thou considerest all created beings in this point of view. And how is it possible to behold the grandeur and glory of God in the works of the creation, without feeling in the soul the strongest emotions of veneration, love, gratitude, and perfect confidence? Yes, reader, here are objects which demand thy highest reverence, thy most fervent love. Here is the source from which all that is useful, all that is agreeable, all that is delightful in nature derives its origin. Here is the

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Lord, who is alone worthy to receive from thee praise, honor, and adoration. This is the most rational and suitable occupation; that for which man was expressly created, and to which the whole creation invites him. If thou art obedient to thy Creator, if thou seekest to conform in every part of thy conduct to the rules of wisdom and order which he has observed in the construction of the universe, this will be the best praise thou canst render to him. And if with filial confidence thou fearlessly reliest on that God who has created thee, this is the highest mark of reverence that he requires of thee. Seek only to become, through Christ, a child of thy heavenly Father, and thou wilt be naturally disposed to fulfil all the duties which thou owest to thy God.

FEBRUARY 15.

CORPOREAL SUPERIORITY OF ANIMALS TO MAN.

On an attentive examination of the bodies of animals, we shall discover various advantages which the human body does not possess. It cannot be denied that they are much stronger, more solid, and more hardy. Most animals, as soon as they come into the world, are able to use all their limbs, to seek their food, and to follow those instincts with which the Creator has endued them. They are not subject to those dreadful diseases with which human nature is so frequently afflicted. And what facilities do they possess with respect to their motions and the use of their senses! How delicate is their smell, how piercing their sight, how rapid their motion, whether flying or running! And if

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we consider the majestic figure and admirable conformation of certain animals, we shall find that our bodies are very little superior to theirs, nay, that in many respects they have the advantage over us.

There have been persons who have found fault with the distribution of corporeal faculties and endowments. They fancied that they had reason to be dissatisfied because God had not given them the swiftness of the bird, the strength of the horse, the acute smell of the dog, the piercing sight of the eagle, and the agility of the stag. Ignorance and stupidity are incontestibly the real causes of this discontent. Could they duly appreciate the value of a rational soul, they would easily discover the superiority of their faculties over all those possessed by animals. Why has the Creator conferred on brutes certain peculiar corporeal advantages? Why has he given them such astonishing strength, such high perfection of the senses, such extraordinary agility in the motions of the body? Why has he implanted in them such wonderful instincts, and such sagacity in procuring their food? For no other cause than to compensate them in some measure for the want of reason, and the other intellectual faculties with which he has endowed man. Reason teaches us to guard against many diseases, to avoid numerous dangers; by the observation of certain rules, or the use of certain medicines we are enabled to remove, or at least to alleviate the maladies or infirmities of our bodies. Our understanding renders us capable of enjoying innumerable conveniencies, and the intercourse with society affords us a thousand pleasures. Of all these advantages the brutes are deprived, because they have not received the inestimable blessing of reason.

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Corporeal superiority of animals to man.

The Creator would, therefore, have acted with severity towards these inferior classes of his creatures, had he not granted them certain compensations for the faculties which he withheld. For this reason, he was in some respects more liberal to the beasts than towards man, in the distribution of certain corporeal advantages. He gave them a form, structure, and senses appropriated to their respective wants. He endued them with certain instincts, with wonderful agility, and a sagacity which is conspicuously displayed in their mode of self-defence, of procuring food, and in a thousand exigencies. These qualities man does not possess, but he can well dispense with them, since he has received in their stead faculties infinitely more important.

Christian reader, in this dispensation also thou oughtest to admire the wise and gracious providence which God has manifested towards mankind. For us he has so wonderfully formed the brute animals. That they may render us the more useful services, they have received such agility, such strength, and such manifold accomplishments. We should soon experience great inconveniencies, and should be deprived of a multitude of important advantages, relative to our subsistence and occupations, if the animals, whose services we daily need, possessed fewer corporeal perfections. Consider also that the advantages of beasts are confined to this present world; but that man is created for a better where he shall attain to the highest degree of glory and perfection.

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FEBRUARY 16.

THE MOON.

AMONG the heavenly bodies, next to the sun, the moon exercises the most beneficial influence upon our globe. Were she not of herself an object highly worthy of our attention, she would, however, deserve our particular notice on account of the important services which she renders to the earth. Most of the phenomena of the moon may be discovered with the naked eye. She is an opaque body, her luminous part being always turned towards the sun. The increase and decrease of her light suffice to prove that the moon is a spherical and opaque body, which receives her light from the sun. The moon goes round the earth in twenty-nine days, and round her orbit in twenty-seven, moving at the rate of 2290 miles in an hour, and travelling round the sun every year in company with the earth. But such observations as we may make with the naked eye on the moon, fall far short of what has been discovered with the aid of telescopes and calculation. What obligations do we not owe to those enlightened men, who, to extend our knowledge, and to display to mankind the glory of the almighty Creator, have undertaken researches, by which we are enabled to form the grandest ideas of the heavenly bodies! From their patient investigations we now know that the moon, which we ignorantly imagined to be no larger than a common plate, is, relatively to the earth, of considerable magnitude. The moon's diameter is 2180 miles, so that she is only thirteen times smaller than our globe. Though she is the

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nearest of all the planets to the earth, yet her distance from us is not less than 240,000 miles. On the surface of the moon appear various spots, which may be perceived by the naked eye. Some of these are pale and obscure, but others more luminous, in proportion as they reflect more or less light. The luminous spots are probably mountains, whose height is proved by the shadows which they throw invariably from the sun, and perhaps the dark parts are seas, which, from their nature, absorb most of the rays of light, and reflect very few. *

These discoveries, to which no well-grounded objections can be opposed, teach us, that the moon is a body much more considerable than ignorant people imagine. The magnitude, the distance, and the whole nature of this celestial body, ought rather to afford us a new demonstration of the infinite power and wisdom of our Creator. Is it possible that a planet of such magnitude as the moon, should be destined for no other purpose than to give light during certain nights to our globe? Is it possible that this orb, which bears so great a resemblance to our earth, and is probably composed of the very same kind of substance as this globe, should have been created by the Almighty merely to oc-

* Respecting the existence of seas in the moon, astronomers are not agreed; but it is certain that this satellite contains mountains, though Dr. Herschel has demonstrated that they cannot be of such height as some observers have calculated. That philosopher has likewise discovered another coincidence between the moon and the earth, in the existence of lunar volcanoes, several eruptions of which he has described. T.

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casion the tides of our seas, and to afford to the inhabitants of the earth some other advantages, with which we are unacquainted? Can it be imagined that the surface of a body, comprehending many millions of square miles, is destitute of living creatures; and that the Eternal has left this immense space empty and desert? How could such ideas be reconciled with the wisdom and goodness of the Creator? Let us rather suppose that the Almighty has established his empire in the moon, as well as among us. There also he has undoubtedly placed innumerable beings, who, with us, adore one common God and Father, and for whose happiness he provides with the same tender solicitude as he manifests in behalf of his terrestrial creatures.

But as our knowledge on this subject is necessarily so limited, let us consider only those advantages which the moon affords to the earth. How evidently is the wise providence of God displayed towards mankind! He has assigned to the moon her course so near the earth, that she reflects more light upon it than all the fixed stars together. In this he has consulted not only our pleasure, but likewise our profit, as the light of the moon is of the highest service to us both in travelling and in pursuing many necessary occupations. And in what confusion, what embarrassment should we not be with respect to the division of seasons, if the changes of the moon, which take place with such invariable regularity, had not assisted us in the regulation and division of time! The calculations of astronomers, it is true, relieve us from the necessity of observing, for this purpose, the changes of this planet; but all the advantages which we derive from the use of almanacs would have been un-

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attainable without accurate observations on the course of the moon.

Almighty God! in the light of the moon, as in that of the sun, I adore thy wisdom and thy goodness. The more I contemplate the heavens which thou hast formed, the more thy greatness fills me with astonishment and admiration. O let the eyes of my mind be raised above all earthly objects to thee—to thee who hast created all the heavenly bodies, and hast so wisely arranged them for our advantage. Let the starry firmament, which illumines our winter nights, proclaim to me thy sovereign majesty, and teach me the immeasurable extent of thy empire. When, O Lord, shall I reach that blissful abode, where I shall obtain a nearer and more distinct view of the wonders of thy grace!

FEBRUARY 17.

UTILITY OF RAIN IN WATERING THE EARTH.

THE fertility of the earth principally depends upon the humidity which it receives from rain and other aqueous vapors. If the irrigation of the earth were left to the care of man, he would be doomed to a life of incessant toil, and in spite of all his exertions drought and famine would spread universal desolation. All the ingenuity and all the strength of men would be inadequate to water what their hands would have sown and planted. They might exhaust rivers and their fountains, and yet they would not be able to supply the vegetable creation with sufficient moisture to prevent the plants from drooping and perishing. What an important part of the divine economy in the kingdom of nature is

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it, that God keeps the rain collected in clouds, as in reservoirs, and dispenses it by means of the winds to the earth and its productions! Every shower of rain fertilizes the earth, which, without this refreshment, would soon exhibit a languishing and melancholy appearance. The treasures poured forth by the surface of the earth are infinitely more valuable than the metals and precious stones contained in its bosom. Human society might subsist without gold or silver, but not without corn, plants, and herbage.

Consider only, my dear reader, the inestimable benefits which rain confers on our globe. Rain, falling at a seasonable time, gives a new aspect to the earth, and has more virtue than the dew, which at night refreshes the vegetable kingdom. The furrows of the ploughed field eagerly drink the rain that is poured upon them. In the seed scattered over the land, we perceive the fertilizing energy which seconds the labors of man. He ploughs, he digs, he sows, he plants, but it is God that causes his work to prosper. By reason and strength he is enabled to perform these operations; but what he cannot effect, God himself executes. In winter he covereth the seed with a mantle; in spring he warmeth and vivifieth it with sunshine and with rain. He crowneth the whole year with his goodness, and causeth his blessings to succeed each other, so that man not only finds a subsistence, but his heart is filled with joy and gladness. The divine benediction descends not only on the cultivated lands, it drops upon the meadows and the pastures of the wilderness. Even the tracts of which no one takes account, and from which no person derives immediate benefit, are the objects

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of his providential care. Nay, so widely is the goodness of God extended, that the mountains and hills rejoice on every side, and present to man an enchanting appearance. His rain falls not in vain upon them. Even though they may produce no fruits for our support, yet are they inexhaustible reservoirs of water for the earth, and the nurseries of plants and herbs conducive to the health of man, and the subsistence of other animals.

Forget not, O Christian, the blessings which God confers upon thee. How often, especially in this season, doth God water the earth by means of rain! But how seldom dost thou reflect on the importance of this benefit. Learn to appreciate its value, and consider only how desolate and dreary all Nature would appear, were the heavens above our heads of brass, and the earth beneath our feet of iron. All the plants and trees would perish; every living creature would pine away; we should inhale death with the air, and all the rivers and streams would be dried up. As often as the Deity waters the earth with rain, so often doth he pour down upon us new blessings and delights. And wilt thou still murmur if the rains of winter are frequent and abundant? Wilt thou have the temerity to arraign the government of God? Rather, O Christian, oughtest thou to praise thy Creator for every drop of rain which he sheds upon the earth; to be deeply sensible how gracious he is towards thee.

For us the seasons regularly succeed each other; for us the rain descends to fertilize the earth. God opens his liberal hand to dispense his bounty to mankind, and causes his blessing to rest upon every region of the globe. Adore, then, thy Creator.

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Consider what he has already done for thee, what thou mayst still expect from his goodness, then will thy heart overflow with praises and thanksgivings.

FEBRUARY 18.

EMBLEMS OF DEATH IN WINTER.

I HAVE continual occasion to be reminded of the end of my life. Too often do I endeavor to drive from my mind the ideas of death; and though this may not be the case, a thousand things either leave me no time to think of that subject, or render the recollection less beneficial than it ought to be. Nevertheless, it is necessary for my own safety and peace of mind that I should frequently think of death, and thus diminish the fear which it so naturally inspires. To this end, I will avail myself of the present season, and consider some of the objects which daily present themselves to my view, as the images of death.

All Nature is now stripped of the beauty and charms with which in summer she was so profusely decorated. The fields and the gardens in which we lately walked with such delight, are desolate and dreary, and no longer invite us to repeat our visits. The days are too short and inclement to be passed in the open air. Is not this a striking emblem of my life, when I have arrived at the winter of my age? Then all the charms on which I prided myself in the spring and summer of my days, will disappear. The moroseness and the imbecility incident to old age will no longer permit me to take delight in juvenile pleasures, and my company will be equally disagreeable to many of my youth-

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Emblems of death in winter.

ful companions. The short and gloomy days of my old age will not be pleasing to me, and if I think rationally, I shall ardently long to be removed into a better life.

How short are the days in this season! But yet we have no reason to complain of their brevity, now that so few attractions meet the eye. As my mortal life is nothing but a continual conflict with sin and misery, is it not a gracious dispensation of my God, that he has confined its duration to so short a period? My road to heaven leads through affliction: ought I not to bless Divine Providence for having made the passage so short?

Many species of animals pass the winter in profound sleep, from which they do not awake till they begin to feel the vivifying warmth of spring. Thus shall my inanimate body repose in the grave, till the day of universal judgment shall rouse it from its slumber.

In winter the night steals upon us before we are aware, in the midst of our occupations. While we were perhaps preparing to finish this or the other business, night arrives, and puts an end to our labors. In this we may discover a striking image of the night of death. It overtakes us when it is least expected. In the midst of projects of future felicity, in the midst of the most important undertakings which I fondly hoped to accomplish, will this awful night surprize me. O that it may find me engaged in occupations which may conduce to my eternal felicity.

The most dismal circumstance attending the nights of winter is, that they continue so long before the light of the sun returns. And perhaps we may be struck with horror on reflecting that our

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bodies shall be so long buried in the night of the grave. But as the winter nights glide imperceptibly away in refreshing slumber, so shall the night of death be past before I am aware, and the grand day of the new creation shall commence.

These, reader, are reflections by which the winter may be rendered edifying and instructive to you. Be not afraid often to contemplate these images of death, and to make a judicious application of them. Make yourself familiar with the idea of your latter end. Then will you be able to face death without trembling; he will be to you a comforter in affliction, a faithful friend in prosperity, and a shield against every temptation.

FEBRUARY 19.

OF THE MEANS OF PRODUCING FIRE.

DURING the long nights and the severe cold which we experience, fire is a blessing which cannot be sufficiently prized. How miserable and how dismal our lives would be in winter, had not God given to fire the property of lighting and warming our apartments, and had not this element been diffused throughout all nature for our service! Fire exists in veins of sulphur, in the fat of animals, in oils, in the wax which the bees collect from the flowers, and in all vegetables, though externally we are unable to perceive its action. Friction, however, discovers its presence even in flint: at least it proves that there must be fire in the air which happens to be between the points that come in contact. By the rapid and repeated collision of hard bodies, such as steel and flint, the fire contained in those bodies is put in motion, and the

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particles which are detached from them are capable of setting fire to any substance. This is the most common way of obtaining fire for domestic purposes: but most people are satisfied with the enjoyment of the blessing of fire to prepare our food, to give light to our houses, and warmth to our bodies, without taking the trouble to enquire how it is produced. Were we more attentive to the origin of the phenomena of Nature, we should find traces of infinite wisdom and goodness where our ignorance would not have expected.

And certainly it requires no very profound reflection to discover in the phenomena of which we are treating, the wisdom and bounty of our Creator. With the most beneficent view he has diffused fire throughout all Nature, that it might be constantly at hand for our use, and that we might enjoy its services on every occasion. For our benefit this matter assumes a thousand forms, and by combining with a multitude of other bodies, it procures us the most important advantages. Let us accustom ourselves to be more attentive to blessings of this kind, which we daily receive from the bountiful hand of our God. I know, indeed, that it is their constant and daily return that renders us cold and indifferent; but the proofs of the divine bounty which are of such frequent recurrence, are those with which we should be least capable of dispensing, and are therefore particularly entitled to our acknowledgment and gratitude. Let then your thoughts, my brethren, be often directed to your preserver, and while you enjoy the blessings of your God, however small they may appear, accustom yourselves to raise your hearts to him, and to adore him as the source of your happiness and well-being.

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Of the equal division of the seasons

O God, how great is thy goodness which thou hast diffused over the whole world! Thy love encompasses us on all sides, like light and fire. Communicate to my soul, my heavenly Father, some sparks of the fire of thy love, and grant that my brethren likewise may participate in its salutary influences.

FEBRUARY 20.

OF THE EQUAL DIVISION OF THE SEASONS.

THOUGH the sun is now at a great distance from us, and intense cold locks up the treasures of the earth, there are regions where the inhabitants are enjoying the beauties of spring, others where rich harvests are repaying the toil of the husbandman, and others again in which autumn is replenishing their store-houses with ripe fruit. Thus wisely hath the Almighty regulated the revolutions of the seasons, and bestowed on all his creatures a certain proportion of his blessings. His impartial love is extended to all his creatures, without distinction of rank, nation, or merit. That they stand in need of his benefits is a sufficient motive for him to impart them. His eye, therefore, looks with the same compassionate regard on the uninhabited desarts of Arabia, as on the smiling plains of Europe. We shall find that the government of God is every where alike, whether we direct our view to the one pole or to the other.

But if God with equal hand dispenses the blessings of life, why has he withheld from some regions the charms of spring, while he bestows them upon

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us in so rich a measure? Why has he commanded the sun to distribute his rays with such partiality as to produce in one place nights, and in another days a month long. Why are not the continents of ice about the poles as beautiful and as fertile as our plains and vallies?

Who art thou, O man, that presumest to ask these questions? What right hast thou to call a Being supremely wise to account respecting his government of the world? Humble thyself, proud mortal; and even there, where thy understanding would discover defects, acknowledge the traces of infinite wisdom. Thou imaginest, perhaps, that Providence has denied to one portion of the earth the blessings which are so profusely bestowed on others. No, reader; God has given to every country all that is necessary for the subsistence and convenience of his creatures. Every thing is adapted to the climate under which they live, and whatever is required for their preservation is supplied by the wisest means. The hours of the day vary in different parts of the world according to certain rules, and all the zones enjoy nearly an equal number. There is scarcely any inhabited region which the sun favors with his presence longer than another; it is only distributed in a different manner among the different divisions of the globe. The inhabitants of the torrid zone have the sun above their horizon for the same space as he illumines the hemisphere below it during their night. Their day and night are always of equal length, while the inhabitants of the contiguous zones have this equality only twice a year. The sun, it is true, alternately recedes, and gives summer to one side of the earth

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while he abandons the other to winter; but he never fails to return from one extremity of his annual course to the other. The length of the day in summer compensates for the unequal division of day and night in winter. Even in those countries which compose the two extreme zones, there is a change. If they are for weeks deprived of the aspect of the sun, they are indemnified by seeing him for the same period above their horizon. The small deficiency in the hours of the day Providence abundantly supplies by other means.

O Lord, the earth is full of thy bounty. It is diffused throughout every climate, and wherever the wind blows, so far does it extend. Where is the country on the face of the globe that doth not partake of thy beneficence? Where is the province in thy vast empire, in which traces of thy paternal care may not be discovered? Where is the being—the man, who doth not see and experience that the Lord is good? I rejoice in thy benign government, and in the manifold blessings which, for the comfort of thy creatures, thou hast shed abroad over the whole face of the earth. Why should I not wish that my fellow-creatures in every region of the globe may live as happily, as peacefully, and as contentedly as myself? O God, thou searcher of the heart, thou knowest that I am not so selfish as to envy others their felicity, or not to wish them an equal portion of the benefits which I myself enjoy. O God of love, let me become more and more like thee; as thou extendest thy benignity to all thy creatures, and conferrest on each, without respect of persons, all the blessings which he is capable of enjoying, grant that in like manner I may

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cherish an universal love toward all my fellow-men, and do for them all the good that lies in my power. To thee shall ascend, at least, my fervent prayers in behalf of the whole human race.

FEBRUARY 21.

OF THE UTILITY OF THE SENSES.

I HAVE senses; that is to say, I am a being, who, by means of various corporeal organs of wonderful structure, can procure sensations of different kinds. By my eyes I can acquire conceptions of light and colors; by my ears, those of every variation of sound; by smell and taste, those of agreeable or disagreeable odors, of bitter and sweet, and similar properties of alimentary substances; by feeling, those of hot and cold, wet and dry, soft and hard.

How miserable should I be were I deprived of the organs of vision, hearing, taste, smell, and feeling. Had I not sight, how should I be able to guard against the numerous dangers which encompass me; how could I form conceptions of the magnificence of the starry heavens, or of the beauties of the fields, or of other agreeable objects with which the earth is filled? Without the organs of hearing, how could I be apprized of distant perils, or enjoy the reciprocal interchange of sentiments, or receive delight from the harmony of music? Without hearing, how could I have received instruction in my youth, how could I have acquired speech, ideas, and other faculties, by which I am distinguished from stones or brutes? Were the organs of smell and taste denied me, how should I

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discriminate between the various kinds of meat and drink, enjoy the perfumes of spring, and derive pleasure from a thousand objects. Had I not feeling, how should I be able to discover in eating or drinking, asleep or awake, any thing that might hurt or injure my body? How could I take the precautions necessary for its preservation? I cannot be too thankful to the Almighty for having conferred on me the gifts of sight, hearing, feeling, and speech. I adore my beneficent Creator; I acknowledge and celebrate his bounty. My mouth shall overflow with thanksgivings, and my ears shall attentively listen to the songs of praise which resound from all Nature.

Grant that I may never undervalue or abuse my senses! Thou, my Creator, hast given them to me for the noblest purposes. How should I dishonor thy liberal bounty, and the admirable structure of my body, were I to use my senses merely for animal purposes, without endeavoring by their means to attain more important ends. How wretched should I be, if I sought happiness only in the empty enjoyments of sense, and preferred them to the far nobler pleasures of the mind; for a time shall come, when my eyes shall no longer be sensible of the charms of agreeable objects; when harmonious sounds shall cease to delight my ear; and when my palate shall relish neither the most exquisite viands nor the most delicious liquors. A time shall come when my senses shall find no pleasure or satisfaction in terrestrial objects. Alas! how miserable should I be, had I then nothing to nourish my mind, to cheer my spirit, and to gratify my desires! Direct me, O spirit of grace, that, in the use of my seases, I may never lose sight of

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the grand object of my existence. Enable me to glorify my Creator by the organs of my senses, and to habituate myself, even here below, to those noble occupations, in which they shall once be employed in heaven.

At this moment, when I have the happiness to possess my senses unimpaired, I think of such of my unfortunate brethren as are either defective in their senses, or are entirely deprived of certain organs. O ye blind, ye deaf, ye dumb, I cannot see you without commiserating your lot, and without being doubly grateful for the advantages which I enjoy. Who am I, O God, that thou hast not placed me also in the class of those unfortunate beings? How can I praise thee sufficiently for the perfection of my senses? In mercy remember those who, by the defect of theirs, are deprived of so many comforts! Indemnify them, if it be thy pleasure, for these imperfections, with other advantages. Grant, at least, that in the life which is to come, they may be happy, both with regard to body and soul.

FEBRUARY 22.

ELEVATION OF THE HEART TO GOD.

When I raise my heart toward God, I answer, in some degree, the end for which I was placed on the earth, and enjoy a foretaste of that felicity which awaits me in heaven. How contemptible seem all the vain amusements of the world, when the heart has accustomed itself to find its highest

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joy in God and its Redeemer! How mean, how insignificant I appear in my own eyes, when I compare my nothingness with the infinite majesty of the Deity! How deeply is the innate pride of my nature abased, when I lose myself in the ocean of the divine perfections! What an ardent desire is excited in my heart, that I may soon behold that glorious day when I shall be for ever united to this eternal and infinite Being!

But have these important advantages such influence over my heart, as to induce me to devote myself in earnest to this occupation? On the contrary, instead of fixing my thoughts on so sublime an object, they are generally engaged with terrestrial and perishable things. Instead of taking delight in meditating on my Creator, I find pleasure only in that which gratifies the senses. Instead of loving a Being, in whom is centered all that can be called amiable, who alone is able to render me truly happy, my heart is attached to the earth, and is fond of such things as cannot confer true felicity, and as I cannot long enjoy. May experience make me wise. Hitherto I have loved only the goods of this earth, and have suffered them to take full possession of my heart. I have sought delight and happiness in things more perishable and more tansient than myself. But now the Lord has opened my eyes. I perceive a Being who possesses all perfections, who created me out of nothing, who gave me a soul, which nothing but durable and eternal joys is able to satisfy. To that Being will I for the future consecrate my heart, and entirely devote myself to him as his property. In him alone will I seek joy and consolation. The

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goods of this life, which I foolishly preferred to celestial blessings, will I now exchange for more solid advantages. I will, however, continue to use the former, according to the will of my Creator, but will never more prefer them to the love of God. Rather shall all creatures furnish me with an occasion to elevate myself toward my Creator, and to praise the goodness of him who has given to terrestrial things the power to cheer my soul and to refresh my body. When I enjoy any of these blessings, I will think: If I find delight in so small a portion of the works of my Creator, what extatic felicity must it not afford to behold him as he is. How pure must be the happiness of the blest, who are united with him! If the pleasures which cannot be enjoyed without a frail and perishable body, are capable of giving such pleasure to my soul; what raptures shall we be susceptible of feeling when we are released from this earthly tabernacle! What ineffable delight shall I taste, when my unfettered spirit shall contemplate the face of the Lord! If a rill of joy is here so agreeable, what shall be the source whence flow all the streams of pleasure! If a ray of light is here so animating, what transport shall the sun himself convey! If God here appears so admirable in his works, how much more so shall he be in a future world! O how ardently I long soon to attain to the enjoyment of that bliss, and to be united with my God! Fly swiftly, ye gloomy days, which I have yet to spend here below! Speed your course, ye hours, which delay the happy moment when I shall acquire a more perfect knowledge of God! O day, unobscured by clouds or mists, when my soul, delivered

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from the burden of this gross body, shall soar above all the stars, and pay her adoration before the throne of Jehovah—come soon, O day, so ardently desired!

FEBRUARY 23.

CAUSES OF COLD AND HEAT.

WHENCE proceed the vicissitudes of cold and heat upon the earth? By what means does Nature produce these revolutions? It is incontestible that in winter the temperature depends on the situation of the sun: for when our globe, in its annual course round that luminary, is placed in such a manner that its northern hemisphere is turned away from the sun, when his rays fall obliquely on its surface, and he appears only a few hours above the horizon, it is impossible that his rays can produce any great degree of heat. But the position and the distance of the sun are not the only cause of cold. He passes every year through the same constellations, and is not farther from us in one winter than in another; but yet the degrees of cold in our winters are very different. In one winter the weather shall be as mild as in autumn; while in another, the largest lakes and the broadest rivers are frozen, and men and animals can scarcely find protection from the severity of the cold. Even in those regions where, throughout almost the whole year, the days and nights are of equal length, the heat of the sun is too feeble to dissolve the ice on the summits of the mountains. Above reigns the most inclement winter, while you are exposed below to the intense

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heat of a tropical summer. If the sun were the sole cause of heat and cold, how would it be possible to account for these phenomena?

Nature is rich in resources; and a thousand causes of which we are ignorant may aid her operations. We know, however, that the air and winds have a powerful influence on the heat and cold of a country. Hence it sometimes happens that the longest days of summer are cold, when the atmosphere is charged with vapors, and the heavens have been long obscured with clouds, or when rude north winds prevail. To the same cause it is likewise to be attributed that sometimes even in winter the cold is not very intense, when the winds waft to us a milder air from southern regions. The peculiar nature of the soil has also some effect on the degree of heat and cold. Thus in Siberia, where the earth contains a great quantity of saline particles, which tend to increase cold, the temperature is lower than in other countries which are nearer to the north pole, and where the sun's rays fall more obliquely.

These, and probably other reasons which are unknown to us, influence the temperature of the air, and produce at one time heat, and at another cold. But what mortal is acquainted with all the springs in the grand machine of Nature, and can explain their effects! Most of her phenomena fill us with astonishment, and we are obliged to acknowledge that all the sagacity, even of the greatest philosophers, is not sufficient to penetrate into the mysterious recesses of Nature. We see only a part, and doubtless but a very small part of her operations. And certainly it is for wise reasons that the Creator

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has concealed from our view the causes of so many effects which we observe in Nature, in order to lead our understandings back to ourselves. What advantage should we derive from it, if our knowledge of Nature were ever so perfect, and we neglected the knowledge and the amendment of our hearts? We know enough to live happy and contented. A deeper insight into the works of Nature would perhaps fill us with pride, disturb our peace, and render us forgetful of God. Let us, therefore, apply the little we know concerning the operations of Nature, to glorify God and to improve our hearts. If, notwithstanding all our investigations, many things are still concealed from our view, let us thence deduce this natural conclusion, that the wisdom of our Creator is infinitely great, and that it behoves us short-sighted mortals to adore the Most High, with a deep feeling of our own weakness and insignificance.

FEBRUARY 24.

SINGULAR PRODUCTIONS IN THE MINERAL KINGDOM.

IT is extremely difficult, nay, it may be said, impossible for the limited understanding of man to embrace at once the whole empire of Nature, and to acquire a knowledge of the extraordinary properties of all her productions. The easiest way, therefore, to make ourselves acquainted with her wonders, is to direct our attention to single and detached beauties, and at first to be content with the investigation of the most simple phenomena. At present, then, let us consider some curiosities be-

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Singular productions in the mineral kingdom.

longing to the mineral kingdom; even there we shall discover traces of the infinite wisdom of the Almighty.

Among the stones or iron ores, the loadstone or magnet deserves particular attention. This stone, when suspended, invariably turns in such a manner that one of its extremities points toward the north, and the other toward the south; and these two points, which are called poles, contain the greatest portion of the attractive property of the loadstone. It is particularly remarkable that it attracts no other substance than iron, and that if you take two magnets, and place the north pole of one opposite to the south pole of the other, they will be mutually attracted; whereas the two south or two north poles repel each other. The magnet likewise attracts bodies which contain iron. Neither the directive nor the attractive power of the magnet is diminished by the interposition of a foreign body. Steel filings scattered on a plate of metal or of wood, or of any body not magnetic, will be affected by the motions of a magnet under the plate; and ferruginous bodies are attracted with the same ease, and at the same distance in the vacuum of an air-pump as in the open air.

In mercury, or quicksilver, we find properties equally remarkable. It assumes every form which you chuse to give it, and at last it appears again in that which is natural to it. Exposed to the fire, it flies off in vapor; by long agitation it is converted into a powder; by congelation it is transformed into a hard, bright, and transparent crystal, but which may always be restored to its original fluid form.

Gold is the most precious of metals, not only on

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account of its scarcity, but likewise on account of its peculiar properties. It is the heaviest of all metals, except platina, and when pure, is so unalterable, that it may be exposed for a long time to the action of a strong fire without sustaining any sensible diminution of weight. The tenacity of gold is so great, that a wire, one tenth of an inch in diameter, is capable of supporting five hundred pounds. Its malleability and ductility are so remarkable, that their limits could never be exactly ascertained On gold lace the thickness of the gold has been computed to be less than the one hundred and thirty-four thousandth part of an inch, and the degree of extensibility has been carried still farther. In ordinary gold leaf, a grain is made to cover fifty-six square inches and a quarter. In this state its surface is so great, that it may be made to float in the air with the slightest agitation, and its thickness is not more than the two hundred and eighty-two thousandth part of an inch.

The extraordinary crystals of common salt, the brilliancy of certain stones, the remarkable figures of the earths in which metals are imbedded, the fossils which are frequently found on the highest mountains, hundreds of miles form the place of their origin, that is, the bottom of the sea, and a thousand other objects in the mineral kingdom seem well calculated to excite our curiosity.

No employment whatever affords so much pleasure, and presents so many charms, as the attentive examination of the works of Nature. Were we to live for centuries on the earth, and to devote each day and each hour to the study of the phenomena and singularities of the mineral kingdom only, still at the end of that period we should meet

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with many things which we could not explain, which would remain concealed from us, and would more and more excite our curiosity. Let us then, as the duration of our life scarcely extends to half a century—let us, I say, make a good use of the time allotted to it, and employ it, as far as our indispensable duties permit, in the contemplation of Nature; and thus procure for our minds the most innocent and durable pleasure. The more we meditate on the designs of God with his works, the more this satisfaction will increase: for the curiosities of Nature are infinitely more wonderful than all the productions of human art. The latter do not always contribute to the advantage or the well-being of man; they are often nothing more than the objects of barren admiration; but in all, even the most remarkable works of Nature, the general good of the world is the principal end and design. They exist not merely to be looked at, but also to be enjoyed. In all of them is manifested the goodness as well as the wisdom of the Almighty.

FEBRUARY 25.

EXPERIMENTAL PROOFS OF A DIVINE PROVIDENCE.

ENDEAVOR, O Christian, to enumerate all the blessings which the mercy of God has conferred upon you from the commencement of your life to the present moment. Can you count the stars of heaven? No more can you count the blessings you have received in one single year. How then can you reckon those bestowed during a period of from twenty to eighty years? the blessings of infancy, which you have forgotten, the nights which you

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have passed in peaceful slumber, the food which has refreshed and strengthened you? From how many dangers, visible and invisible, have you been rescued! How often has God supplied your wants, and through his goodness, put your unbelief to shame! In every contingency his eye watched over you. Each successive day of your life increased the sum of his blessings. The rising and setting sun witnessed the renewal of his bounty. And who can say how often God may have preserved you from danger, with which you were unacquainted, and exercised his mercy in your behalf, in various ways, which shall not be revealed to you on this side of eternity! What shall we say of the blessings of his grace? That you have been redeemed by Jesus Christ; that the scriptures instruct you in the way to salvation; that you were not born in the darkness of paganism, but in a region illumined by the sun of Christianity; that God by his grace is incessantly operating upon your soul;—are not these proofs of his loving-kindness and compassion?

I can easily believe, my dear reader, that it is impossible for you to calculate the immense series of divine blessings. Let us then confine ourselves to a single day. Endeavor to enumerate the mercies you receive in that short space; light, air, food, strength, a habitation, connections on whom your well-being depends, and the manifold amusements and pleasures of your life. Omit not the faculty of breathing, which you possess. You imagine, perhaps, that this is a thing of little consequence; but can respiration, on which depends the preservation of life, be a trifling blessing? You breathe at least twelve times in each minute. Every minute, therefore, God confers on you twelve bless-

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ings, each of which is so essential, that without it, you would be incapable of receiving another. With respiration God likewise preserves the faculties of your understanding and your will, and the members of your body. Supposing that the soul performs only thirty operations in each minute, and according to the opinion of anatomists, and computing the parts of the body which God every moment preserves, at no more than six thousand, what wonders of preservation shall we discover! For, according to this calculation, you receive every minute from your Creator, twelve blessings relative to respiration, thirty relative to the understanding and will, and six thousand relative to the different parts of the body. He consequently bestows on you each minute six thousand and forty-two blessings, and three hundred and sixty thousand, five hundred and twenty each hour of your life.

May this continual experience of the providence of God make a deep and permanent impression upon your heart. It cannot fail to do so, unless every spark of gratitude be extinguished in your soul. If you have still any sense of the greatness of the divine mercy, and of your own unworthiness, you cannot withhold your gratitude from the preserver of your life. But, in order to keep alive in your heart the remembrance of the blessings of your God, reflect on their prodigious number. The more you accustom yourself to this practice, the more you will be disposed to magnify the Lord your God, and the more pleasure you will take in praising his holy name.

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FEBRUARY 26.

STILLNESS OF THE NIGHT.

I CANNOT reflect without admiration and gratitude on the wisdom and goodness displayed in the means which God employs to ensure our rest during the night. With the close of day, he diffuses over all nature a stillness which announces to all creatures a cessation of their labors, and invites man to enjoy refreshing slumbers. Meanwhile all noise is suspended, the access of dazzling light, and of every thing calculated to make too vivid an impression on the senses, is precluded. All the animals whose activity might disturb us, themselves seek repose; the birds retire to their nests; while the ox, the horse, and other domestic animals repair to the stalls provided for them.

But the stillness of night is not equally agreeable to all. Many of my brethren, who, from pain, sickness, or other causes, pass the night in dreary watchfulness, wish for the interruption of this, to them, melancholy silence. Their sufferings and their uneasiness seem to increase when all around is locked in the arms of sleep. They count the tedious hours, and await with impatience the return of day, when society will afford them some relief. To many sinners who have passed the day in the pursuit of vicious pleasures, the tranquillity of night is disagreeable; it awakens conscience from its slumber, and they are terrified at every noise.

O how I praise thee, my God, who renderest the repose of night so refreshing to me! The health and the peace of mind which I enjoy, procure me the sweetest slumbers. After the fatigues of the

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Stillness of the night.

day, the approach of the night makes me sensible of thy goodness, which has so admirably disposed all things to contribute toward my repose. I retire to my peaceful couch, when the robber rises to pursue his dangerous career. I sleep in peace, while many afflicted with sickness invoke repose as the greatest of blessings, which, nevertheless, they are unable to obtain. I enjoy the sweet refreshment of rest, while the voluptuary is indulging his inordinate appetites, or the miser is tormented with the apprehensions of want, or the discontented man is forming plans for the remotest futurity.

But how often is the tranquillity of night interrupted, either through the profligacy or the thoughtlessness of man! The tumultuous uproar of the drunkard, and the wild levity of the libertine, often disturb the silence of night, and deprive us of the refreshment of sleep. But ought we not to shew so much respect for the order which God has so wisely established in nature, as to beware of wantonly deranging it? Ought we not to bear so much love toward our fellow-creatures as to avoid purposely disturbing their rest, and perhaps endangering their lives by our imprudence? Perhaps this heedless noise and riotous mirth may break the repose of a pregnant female, of a mother who gives suck, or fill the last moments of a dying person with distraction and terror.

How different will be that repose which I shall once enjoy in the grave. There I shall sleep undisturbed, and shall not awake from my slumber till the voice of my judge shall call me to life. O how happy are ye whom death has conducted unto God! You have escaped all the miseries to which we, who are left behind, are still subject. Here

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the happiest life is passed in a continual succession of hopes and fears; and innumerable pains and cares dissurb our felicity. You, on the contrary, sweetly repose in the silent tomb, secure from every affliction. Neither grief nor care can now interrupt your bliss!

FEBRUARY 27.

WINTER EMBLEMATICAL OF HUMAN LIFE.

Snow and rain, storms and calms, clouds and sun-shine are continually succeeding each other in these days of winter. Scarcely has the snow enlivened the face of Nature, when the rains descend and sweep it away. Scarcely does the sun reveal his splendor, when he is again hidden from our view. And are there not similar vicissitudes in the moral world? As many of the days of winter are dreary and disagreeable, so are many of the scenes of human life; and as storms and darkness are necessary and conformable to the wise laws of nature, so also is the adversity which we sometimes experience upon earth.

Who can prevent dark clouds from obscuring the day, or our happiness from being disturbed, sometimes by men, and sometimes by other contingencies? How is it possible that the face of heaven should be continually tranquil and serene, or that the soul should enjoy an uninterrupted calm? The present constitution of our nature will no more permit us to be exempted from pain and disagreeable sensations, than the economy of the material world will allow the sky never to be overcast with dark clouds.

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Winter emblematical of human life.

In the moral world, the passions which often produce good, and often bad effects, may justly be compared to the storms and tempests of the natural world. As the inclemency of winter is a source of fecundity, so afflictions may be the means of increasing our wisdom and strengthening our virtue. Darkness teaches us the value of light; constant sun-shine would dazzle and fatigue the eye; and a serene day never gives us so much delight, as when it has been preceded by gloomy and tempestuous weather.

In like manner, we should not appreciate health so highly unless we learned its value by the painful experience of disease. We should be apt to underrate the worth of friendship, unless we sometimes met with false and perfidious friends. In general we are too much inclined to exaggerate our calamities. The events of the world and the accidents of life are seldom so dismal as we represent them.

Our self-love, our pride, and our pusillanimity often blind us to such a degree, that we consider every little evil that befals us as of the first consequence; and on the other hand, look with indifference on the many important advantages and comforts with which we are favored. It is undeniable that all our adversities are nothing in comparison of the many blessings and pleasures which Providence has dispensed to us; nay, that they are actual benefits, though disguised, if we know how to apply them conformably to the precepts of wisdom: in the same manner as snow, tempests, and all the vicissitudes of the present season are the means by which God bestows on us new favors. And, finally, when the sky has long

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been lowering, we know that the thick clouds will be dispersed, and that light and gladness will return. The heavier are the showers, the sooner they are over; and the thicker is the darkness which they diffuse, the more unexpectedly the sun in general disperses it. Adversity extends its influence over only a small portion of our lives, and when it appears ready to crush all the energies of our minds, this is a proof that our affliction is nearly at an end.

I will then bow without murmuring to the dispensations of my God. It would be unreasonable of me to implore him to grant me nothing but pleasures and happy days. No, my gracious Creator, let rain and sun-shine, darkness and light alternately succeed each other in my life. Should it even please thee to shake my heart by the rude tempests of adversity, I will not repine.

Of what consequence is it whether my cup of life be more or less bitter, for God, in whom I have believed, will make me a partaker of everlasting bliss. Those who here sow in tears, shall there reap with joy. When the sufferings of this short life are past, I shall be enabled to perceive how profitable they have been to me, and shall rejoice that the hand of the Almighty conducted me through these tribulations.

These are the ideas that support me under all afflictions. As the hopes of spring render the desolate appearance of winter supportable, so am I encouraged by the hope of eternal bliss to endure my distresses with fortitude and resignation. Amid the gloom of this life is opened a glorious prospect of a blissful futurity. The glimpse which I obtain

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of eternity cheers me to pursue my course, and thus I am imperceptibly approaching the habitations of everlasting peace, light, and joy.

FEBRUARY 28.

UTILITY OF MOUNTAINS.

WOULD it not be more advantageous for our globe were its surface not so even and disfigured by so many and so prodigious mountains? I may suppose that the figure of the earth would be far more regular, that we should have more extensive prospects, that we might travel with greater facility, and enjoy a hundred other advantages, if the earth were but one vast plain. Perhaps, however, I may be mistaken; perhaps, if there were no mountains on the surface of the earth, we should be deprived of many essential benefits. In order, therefore, to ascertain the truth or fallacy of my opinion, I will consider the obvious utility of mountains, and I shall then discover whether I have reason to be dissatisfied with the arrangement of the globe.

In the first place, it is apparent that from mountains and hills descend a multitude of springs, produced either by the abundant snows, or by the humid clouds with which those eminences are constantly covered. By these springs the rivers are perpetually renovated.

The lofty chains of mountains which run from east to west, and traverse extensive regions, serve to collect the ascending vapors, and to condense them into water. They are, therefore, not only the alembics by which fresh water is distilled for the use of men and beasts, but their declivities

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cause the rivers and streams to descend, and to irrigate and fertilize all the adjacent vallies.

Besides the inestimable advantages of springs which the mountains procure, they have many other evident utilities. They are the retreat of many animals highly serviceable to man, and without any trouble on our part they afford subsistence to numberless species, which we esteem both for their flesh and for their skins. On their sides grow trees, plants, and a variety of herbs and roots, which neither thrive so well in plains, nor possess the same virtues. Their bosoms contain metals and minerals, the generation of which could not take place in level countries, where they would want the necessary humidity.

Mountains and hills are, moreover, useful to protect us from the piercing blasts of the north and east winds; they are the nurseries of the most valuable vines, and the repositories of precious stones. They are natural bulwarks against the ravages of the sea, the violence of tempests, and the inroads of enemies. They may, perhaps, be designed to preserve the equilibrium of the earth; but, be this as it may, they are a kind of amphitheatres, which afford us the most enchanting prospects and agreeable situations, either for single houses or whole towns.

Some of these mountains, it is true, are dangerous and formidable. They occasion tremendous earthquakes, and spread fire and desolation through the adjacent country. But it must be considered that, as sulphur and other minerals not only contribute greatly to the fertility of the earth, but are likewise necessary for the life of all vegetables, it is fit that there should be a general store-house, where

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these substances are deposited, in order to their being distributed by the air over the whole surface of the earth. And though some inconveniencies may result from this arrangement, these cannot furnish any reasonable objection against the wisdom and goodness of God, since they are far outweighed by benefits of inestimable value.

How little reason, then, have we to murmur against the arrangement of the globe, even in this respect. If no mountains existed, we should be deprived of many kinds of stones and metals; springs, rivers, and lakes would disappear, and the sea itself would become a putrid mass. A great number of the most beautiful and useful plants, and many species of animals would soon be extinct, and the privation of either of these would be sufficient to consign us to wretchedness and want. Thus the mountains also announce the infinite wisdom, power, and goodness of the Creator.

O God, great and almighty Lord, I adore thee, and acknowledge with profound veneration the wonders of thy wisdom. All that thou hast created, from the least grain of sand to the loftiest mountain, is replete with order, harmony, and utility for thy creatures. On the hill as in the dale, on the mountains as in the vallies, on the surface as in the bosom of the earth, thou provest thyself the benefactor of thy creatures. To thee, O Lord my God, be everlasting praise!

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FEBRUARY 29.

EXHORTATION TO CONFIDENCE IN GOD.

WHEN I reflect on the perfections which are manifested in the arrangement of the universe, and the manner in which God conducts and governs it, my confidence in him must necessarily be strengthened in an extraordinary degree. How easy may I be with respect to my fate, since it is in the hands of that great Being, of whose power, wisdom, and bounty I have as many demonstrations as there are creatures before my eyes. What wishes could I form for my happiness that could not be accomplished by God, whose power created so many thousands of worlds from nothing! In what embarrassment could I be involved, from which the wisdom of him who spread the heavens, and formed all creatures in so wonderful a manner, is not able to extricate me! Or who shall prevent me from commending my way to the Eternal? What shall hinder me from having recourse to him in all my difficulties and distresses, and from hoping that he will be pleased to listen to my supplications?

I am, it is true, but an insignificant creature; I am lost among the infinite number of his works; and when I consider his grandeur, and the immeasurable extent of his government, I cannot forbear thinking: Who am I, that I should expect he will always listen to me when I implore him to relieve me from this or that perplexity? But, on the other hand, I find comfort, when I reflect that his greatness, his majesty, and the government of so many thousands of worlds do not prevent him from extending his care to the smallest

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worm: why, then, should he not take notice of me, who, however mean and insignificant I may be, yet, as a man and a Christian, have received from him so many prerogatives superior to those of all other creatures?

Here conscience, indeed, objects that I am a sinner, that I have often and wilfully transgressed the commands of my Creator and master, and that I am, therefore, much less worthy of his favors than the meanest of his creatures, which at least cannot commit any offence against their Maker. My conscience represents the justice of God in colors as lively as the universe depicts his omnipotence and his goodness; and bids me fear lest he should employ his power to make me an example of his vengeance in the sight of the whole earth. It is but too true, that in the whole world, which way soever I turn my eyes, I find nothing that is capable of delivering me from this dejecting thought, or furnishing my troubled heart with a well-founded subject of consolation. But under these circumstances it is that the salutary truths of the gospel step in to my aid.

Blessed be thou, my dear Redeemer, who by thy sufferings hast made the knowledge of my Creator, which otherwise would only have been a terror and torment to my soul, a source of joy and consolation! To thee it is owing that I can consider that Being, whose greatness and majesty all creatures announce, as my father; that I can put my trust in him, and not only expect at his hand temporal happiness, but likewise eternal felicity! Ah! it is now that the world begins to appear to my eyes in all its beauty! What ravishing prospects are now opened to my view! And if the

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earth be filled with the blessings of the Most High, how much more shall heaven abound with his mercies! There will his love pour forth his blessings upon me in richest measure; there his wisdom will be unfolded to my eyes in all its splendor; there shall my keener vision penetrate the wonders of the creation: there shall I actually behold the grandeur, magnificence, and beauty of many other worlds, of which the weakness of my senses and understanding will now scarcely permit me to obtain a glimpse. Then will my heart truly overflow with sentiments of veneration, love, and gratitude. Then will my lips celebrate, in emphatic strains, the praises of my Creator. Lord, thou art worthy to receive glory, honor, and power; for thou hast created all things, and by thy will they have existence!

MARCH 1.

EXHORTATION TO CONTEMPLATE GOD IN THE WORKS OF NATURE.

O MY brethren, ye who with me adore the Lord who made the heavens and the earth, come, contemplate his works, consider his wonders, and acknowledge his bounty. Of all the species of knowledge which you are able to acquire, this is the most important, the most pleasing, and the most easy. You might dispense with many sciences which you learn with so much trouble; but the knowledge of God and of his works is indispensable, if you would accomplish the designs of your creation, and contribute to your temporal and eternal happiness. It is certainly right to seek to know

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God, as he is revealed to us in the holy scriptures, but you will not embrace this revelation with full conviction of heart, unless you combine with it those manifestations by which he approves himself in Nature, as the Creator of all things, as your Lord, your Father, and your Benefactor. This is the best preparation for receiving and understanding the gospel of Christ. Accordingly our divine Redeemer, in most of his discourses on the truth of religion, directed the attention of his disciples and hearers to the operations of Nature, and selected various objects from the physical and moral world, to lead men to the contemplation of spiritual and celestial things.

No occupation can be more worthy to engage the attention of man, than incessantly to study the volume of Nature, and there to learn truths which remind us of the infinite greatness of God and of our own insignificance, of his bounty and of our obligations. It is certainly disgraceful to man to be inattentive to the wonders which surround him on all sides, and to be no more affected by them than brute animals. For to this end were we endowed with reason, that we might discover the perfections of God in his works, and glorify him on account of them. In what more agreeable occupation can the human mind be engaged, than in meditating on the wonderful works of God, than in contemplating in the heavens and on the earth, by land and sea, by night and day, the wisdom, the omnipotence, and the goodness of our Creator and Preserver? What can be more delightful than to seek traces of the providence of God in all the kingdoms of Nature, and to discover him in all his works as the benign father of the universe? Believe me, my

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brethren, there are no earthly pleasures with which we are not satiated; but the delight arising from the contemplation of the works of God, is continually producing new sensations; and were we to meditate for thousands of years on God and his works, our minds, instead of being weary of the occupation, would find in it new and increased charms. It is in this point of view that I often represent to myself the felicity of the blest in heaven, and ardently aspire to the intercourse with them, because I am convinced that, in their society, the insatiable desire of wisdom may be most easily gratified.

But while we still live at a distance from this happiness, let us, at least, endeavor to approach as nearly as possible to it, by habituating ourselves even here to that which, in eternity, will be the occupation of all the angels and saints in bliss; let us adore our God in his wonderful works; let us endeavor to acquire a more perfect knowledge of him; let us meditate on his greatness; let us admire in every creature his omnipotence and his wisdom; and contemplate, in every season, his paternal beneficence. This occupation will render you not only the most contented, but the most virtuous of men. For, if you have God and his works continually before your eyes, with what love and veneration for him will you be filled, with what humility will you serve him, with what confidence will you resign yourselves into his hands, and with what fervency will you praise his holy name!

Henceforth, O God, who art so worthy of our adoration, I will contemplate with veneration and gratitude the wonders of thy omnipotence and of thy goodness, which thou hast scattered over the

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whole face of the globe. By the ladder of created objects will I ascend from earth to heaven, that I may study thee, and learn to know how good thou art. All that is around me, and all that is within me, shall lead me to thee as the source of all things, and increase my piety. Yes, my Father, in the presence of all creation I vow to perform this duty. That sun which gives me light, this fire which imparts warmth, this water which quenches my thirst, this earth which supports and nourishes me, all Nature which thou hast arranged for my profit and pleasure, shall remind me of thee, who conferrest blessings upon me by means of all the elements, and every one of thy works shall one day bear witness against me, if I should neglect to contemplate and admire them.

MARCH 2.

UNPLEASANT WEATHER.

NATURE is still desolate and dreary; and the heavens are covered with clouds, which pour forth rain or snow. Impenetrable fogs veil the face of day, and intercept the rays of the morning sun. Scarcely are we cheered by his presence, when thick, tempestuous clouds intervene, and prevent the earth from enjoying his genial influence. How feeble is his power! Not a blade of grass ventures to peep forth; all Nature is still destitute of animation and of charms.

How long shall the joys of spring be yet deferred? When will the days arrive in which the early flowers shall invite us into the fields and gardens? This I know to be the language of many, who en-

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Unpleasant weather.

dure with some impatience the present gloomy and disagreeable weather. But reflect, my brethren, that these changes, unpleasant as they may be to you, contribute to the perfection of the whole, and are consequently necessary to the plan of government which the Almighty has traced out. Without these disagreeable days, all the hopes which we build upon the summer would be blasted. Tempests are beneficial to Nature, and cold tends to promote fertility. Were the air at present warmer, and the weather more agreeable, it would generate millions of worms and insects, which would destroy the seed sown in the earth, and consume the vegetable promise of the year; and how easily might the nascent buds and young plants sustain injury from succeeding frosts, if they were now brought too forward by a milder temperature.

But we short-sighted and ignorant mortals are apt to murmur against God when we ought to adore and praise him; and we consider as imperfections those things in which we ought to discover the infinite wisdom and goodness of our Creator. In many instances, indeed, we know not what we ask, or what we wish; and we should be sufficiently punished, were he to grant our inconsiderate and unreasonable desires. If spring were now to display all its charms, the succeeding days would lose a considerable portion of their beauties; we should soon be weary of them; and the rapid transition from intense cold to excessive heat would be highly prejudicial to our health. It is a greatec blessing than we are aware of, that God produces the revolutions of the seasons by imperceptible degrees. The gradual approach of spring keeps us in the most pleasing expectation, and this tends to

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increase our delight. The tempestuous and disagreeable weather is a relic of the past rigors of winter, a preparation for the enjoyment of the most delicious days, and a fore-runner of the enchanting serenity which spring diffuses over our fields.

O my God! to thee shall my praises ascend, even in these tempestuous days. I will endeavor to impress deeper and deeper upon my mind the conviction that all thy government is nothing but a display of thy wisdom and beneficence. I rejoice that in all times and in all seasons, in storms as well as in calms, in snow and in rain, as well as in fair weather, thou art my father, my preserver, and benefactor. How soon will the unpleasant days which I now pass be succeeded by the delights of spring! And, besides, how can I expect in this world an uninterrupted series of joyful and agreeable hours? My life resembles the seasons. What is it, even in the happiest of times? A continual vicissitude of serene and gloomy days.

MARCH 3.

STATE OF CERTAIN ANIMALS IN WINTER.

We have not yet seen any of the insects and birds, whose innumerable multitudes in summer animate the earth, the air, and the waters. On the approach of winter they abandon our country, which is no longer capable of affording them shelter and nourishment. The first stormy day gives them the signal to desist from their labors, and to quit their summer abode. We are mistaken if we think that winter destroys these animals. They continue to

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State of certain animals in winter.

live, even during that season of the year. Providence takes care that none of them shall perish. The bodies of some animals are so constructed, that the same causes which deprive them of food, produce such a change in their system, that they have no occasion for any sustenance. The cold renders them torpid; they fall into a profound sleep, which continues till a more genial warmth again opens the bosom of the earth, re-produces the things necessary for their support, and awakens them from their slumber. They conceal themselves in caverns, in sands, and in morasses, where no one can come at them to disturb their repose. There they lie in a state resembling death, or rather, a suspension of their faculties, from which they are revived when the genial warmth of spring penetrates their retreats. Some species of birds migrate on the approach of winter, to regions where they find a milder temperature and a less precarious subsistence. Some remove only from one country to another; but many repair to Africa, across the Mediterranean Sea, and in spring return again to our more northern climate.

O Lord! how great is thy wisdom, how bounteous is thy providence even towards the meanest of thy creatures! Thou hast implanted in animals that admirable instinct which apprizes them of the days when they are to forsake their summer habitations, and to seek others during the winter in a different climate; thou hast assigned them the places where they may pass their night of winter in safety; thou animatest them again when the period of their resurrection has arrived.

Whenever I reflect on this change, I am naturally led to think on that which I shall undergo in

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death, which has some resemblance to the state of birds. When my life has run its course, I shall also leave my habitation, my pleasures, my companions, and wing my flight to a better world. I shall also pass some time in a profound slumber: but at the moment of the new creation, I shall awake, and with renovated beauty and youthful vigor enter upon a life that shall last for ever.

This subject furnishes me with another edifying reflection. I observe how God extends his care to the smallest link in the vast chain of creation. I perceive with what paternal tenderness he provides for the support of the meanest being, and preserves its life under such circumstances, that to human wisdom its preservation appears impossible. How grossly then should I offend against his wise government, were I to give way to anxious cares and apprehensions concerning my subsistence? Verily, that God who gives to these insects and birds nourishment in due season—that God who provides these animals a retreat in caverns, and ensures them abundance in distant countries, will also take care of me, and preserve me in times of scarcity and want. With full confidence of heart I believe that he will enable me to procure what is necessary for my support; and should I even, through the malice and cruelty of the world, become an outcast from society, he will provide me a retreat where I may dwell in safety.

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MARCH 4.

TEMPESTS AND WINDS.

WITH what violence the air is agitated! Hark, how the winds roar! See how the clouds gather, with what rapidity they are borne along, what torrents they discharge upon the earth! How tremendous is the force of the winds! They shiver the thickest oaks, level castles and palaces with the ground, which is shaken by their fall: and alas! perhaps at this very moment some hapless vessel is hurled by the violence of the tempest into the abyss! Above her roar the winds; below, the watery gulph threatens instant destruction, and mountain billows surround her on every side. Alas! unfortunate mariners! well may ye wring your hands in despair, well may ye shudder with horror at the approach of the rising wave which will presently entomb you in the bosom of the deep! Before the fury of the tempest shall be appeased, perhaps thousands of families shall be reduced to poverty, and still more shall be plunged into the deepest affliction by the death of their relatives and friends.

But why doth the wise and beneficent ruler of the world permit the winds to spread terror and devastation over land and sea? Ridiculous question! How dare I presume to find fault with the government of a Being supremely wise? Ought I not rather to contemplate his ways in respectful silence, and to persuade myself that they are always for the best? If tempests and hurricanes occasion great devastations, overwhelm ships in the bosom of the ocean, demolish edifices, and destroy men and

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cattle, have you a right to arraign the government of the Lord? You who have calculated with such care the damages which this element occasions, have you also computed the advantages which it confers on the whole inhabited earth? Presumptuous mortal, admire and adore the Lord, who causeth tempests and winds to contribute to the well-being of his empire.

It is by a particular dispensation of Providence that tempests are generally frequent in spring. The mild air in spring softens the earth, which during the winter was frozen quite hard. By this change of temperature, our atmosphere, which was already purified by the frost, is filled with aqueous and noxious vapors; and pestilence and disease would soon sweep away men and cattle, unless the purity and salubrity of the air were restored by means of storms. By these the stagnant vapors are not only set in motion, but many exhalations of different kinds are intermingled, and conduce to the health of man and the fertility of the earth. And is it not an important advantage that ships are wafted along by the winds, that these floating edifices, laden with the treasures of the other divisions of the globe, are frequently enabled to proceed two hundred and fifty miles in twenty-four hours?

Thus, Lord, even in the midst of winds and tempests thou art the benefactor of thy creatures. Oft as the winds roar around me, I will acknowledge thy goodness, and reflect with silent veneration on the wisdom of thy government. O how great art thou, who walkest in the whirlwind and directest the storm! Thou sendest forth the winds from their secret retreats, thou markest out the course which they are to pursue, thou appointest

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them limits, and commandest them to repose when they have accomplished thy purposes. Why then should I be afraid, if thou chargest thy servants to execute thy orders? If tempests rage around me, if the rocks be rent, and darkness obscure the face of Nature, be calm, O my soul, and be not troubled. Commit thy fate into the hands of the Lord; and deposit all thy concerns in the paternal bosom of him who governs and directs the universe. He prescribes to the stars and the winds their appointed course, and shall he not be able to put thee into a path in which thou mayst walk with safety?

However stormy then my life may be in this world, I will neither murmur nor despair. No; that God to whom the winds are obedient, will also set limits to the tribulations which threaten to overwhelm me; and at length, when I have been sufficiently shaken by the violence of afflictions, they shall be succeeded by a serene day, in which I shall enjoy uninterrupted tranquillity.

Alas! how many of my brethren, who in this tempestuous season are traversing the ocean, perhaps for my advantage, but certainly for the benefit of society, are now struggling with the boisterous waves, and with horror awaiting the moment which shall whelm them in the abyss. I cannot forbear thinking of them, while, in my peaceful habitation, I can listen without danger to the howling of the winds. Lord of the ocean and of the wind, protect these my unfortunate fellow-creatures from the fury of the billows, and deign to hear the supplications which in their distress they offer up to thee. Have mercy on them, and on all those who have to encounter the perils of death!

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MARCH 5.

THE AURORA BOREALIS.

In winter, and about the time of the spring equinox, we sometimes observe in the heavens a kind of transparent clouds, which exhibit a variety of colors. Towards the north appears a brilliant light, which is communicated to other clouds that are moving near it. At length from these light northern clouds issue luminous rays, which extend towards the zenith, and sometimes reach as far as that point.

This meteor, which is called the Aurora Borealis, or Northern Lights, may be classed among those natural effects, the causes of which it is impossible to determine. Some naturalists consider these aërial phenomena as magnetic or electric matter, which, by accumulating towards the north, acquires the property of diffusing a certain degree of light. Others think it more probable that the Aurora Borealis proceeds from the minute particles of ice, which, ascending into the upper regions of the atmosphere, are illumined by the light which the Laplanders almost uninterruptedly enjoy. Many are of opinion that it is nothing but a storm which has not yet arrived at maturity. It is, however, probable, that this meteor consists of a matter which apparently bears a considerable resemblance to phosphorus, and of the most subtle, inflammable, and sulphureous exhalations which ascend from the northern countries of the globe, collect in the highest regions of the atmosphere, and are there set on fire in the same manner as lightning is produced in the lower regions.

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The uncertainty of the greatest philosophers with respect to the causes of this phenomenon, may afford you, my brethren, a very instructive lesson. How many incidents occur in the air, in the heavens, and upon the earth, which still remain mysteries to the most enlightened natural philosophers! These phenomena are humiliating to the understanding of man, which, from pride and vain curiosity, is frequently unwilling to acknowledge its limits. A thousand minute circumstances in Nature often confound the wisest in their most profound investigations. There are millions of objects in which we perceive wisdom, utility, and beauty of arrangement; but seldom are we able to discover their true principles, their real ends, and their connection with the corporeal world and with its different parts. How fortunate it is that this ignorance has no influence over our happiness! Without being able to determine the cause of the Aurora Borealis, we may still live peaceful, contented, and happy. Ignorant as we are on this and many other subjects in Nature, yet so much we know, that all the phenomena of the physical as well as of the moral world, are the work of an almighty, wise, and beneficent God, who directs them to the advantage of the universe. This truth may be sufficient for a life so short as ours, and should always operate upon us as a powerful motive to praise the Lord, who performs such wonderful things.

O my God, for this also I bless thy holy name, that thou didst not cause me to be born in those times of superstition and ignorance, when whole nations were filled with terror and consternation by the appearance of these phenomena. This magnificent spectacle exhibited to their disordered imagination

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whole armies ranged in order of battle, or engaged in aërial combats. The Aurora Borealis was to them a prophet, sometimes announcing pestilence, sometimes famine, and sometimes war to the world. But to me this light, with its silent and majestic splendor, shall be a witness of the almighty power and goodness of my God. I can behold it without terror, because I know that the Lord of heaven has not created any thing to torment his creatures. Perhaps in the northern regions there are men who derive important advantages from this phenomenon, which seems to have so little influence over the countries we inhabit.

MARCH 6.

ASTONISHING MINUTENESS OF CERTAIN OBJECTS IN NATURE.

THE azure vault of heaven, its boundless extent, the prodigious bodies in the firmament, the variety of creatures which people the earth, the air, and the waters, all demonstrate the inexpressible greatness of God. But we are mistaken if we imagine that in the immeasurable extent of the universe alone, the power and wisdom of our Creator are discoverable. Even in the minutest objects, in the most inconsiderable parts in the kingdom of Nature, an ordinary capacity may find many subjects of astonishment.

If you go no farther than your own bodies, you will discover objects exceedingly minute, which you have not yet remarked, but which, nevertheless are worthy of admiration. Did you ever examine the singular structure of the hair of your

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head? It consists of hollow tubes, each of which has a root, a living marrow, and many connecting fibres. In the white matter which adheres to the teeth, and is called tartar, many small insects have been discovered by means of glasses which magnify a million times. It has been found that, in a space no larger than a small grain of gunpowder, millions of these insects might be contained.

Ought not these things, my brethren, to humble us in our own opinion, and to impress most powerfully on our minds the greatness of God? Every thing tends to convince us what an infinite number of objects exist upon the earth, in the air, and in the waters, which are to us impenetrable mysteries, and that we are acquainted with the smallest portion, not even with the surface of things. There may be a thousand wonders about our bodies, which no person has yet thought of, and the existence of which we should be far from suspecting. How many objects may there not be in nature so minute, that the microscope cannot detect, or the understanding conceive them, and all of which, nevertheless, manifest the greatness of God. The little that has already been discovered may serve to convince us that in small things as well as in great, our Creator displays his power, wisdom, and goodness. The splendor of the sun and the turbulence of the tempest declare the goodness of our God, and the sands on the sea-shore proclaim his glory. The meanest insects, the tree clothed with magnificent foliage, every object in Nature unanimously cry: It is God who hath made us; give all honor and glory to our Creator.

Yes, thou adorable God, to thee alone will we give glory. The smallest of thy creatures shall re

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mind me of thy greatness. In the structure of the fly, as in that of the elephant; in the diminutive blade of grass, as in the stately oak; in the formation of a grain of sand, as in that of a mountain, will I adore thy infinite wisdom and power. Nothing that thou hast created will I despise, or consider as unworthy of my notice. Who knows whether apparently the meanest of his works may not comprehend the greatest wonders? Is not every thing which God has thought fit to create and to preserve, on that account only of sufficient importance to engage my attention? As for myself, I am nothing in comparison of the innumerable worlds which the Lord has created, and yet he deigns to extend his care to me, to direct my motions with the same wisdom and goodness as he governs the courses of all the stars. What am I, Lord, that thou shouldst be mindful of me? How can I be sufficiently thankful to thee for the high favors thou hast conferred on me, who am but dust and ashes!*

MARCH 7.

GRADUAL DEPARTURE OF WINTER.

THE same wisdom which, at the beginning of winter, caused the cold gradually to increase, now

* This portion of the work is somewhat longer in the original, in which the author has thought fit to repeat in the same words a considerable part of the reflections for the 15th of January. This has been omitted without scruple in the translation. T.

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Gradual departure of winter.

orders it so, that it diminishes by degrees, and the inclement season approaches towards its close. The sun now remains longer above the horizon, and his rays act more powerfully upon the earth. Snow storms cease to darken the air; the nights are accompanied only by a white frost, which soon disappears before the returning sun. The fogs and vapors are dispersed, or descend in fertilizing showers. The earth is rendered light, and susceptible of imbibing humidity. The seeds begin to sprout; the branches which appeared dead put forth buds, and the tender blades of grass venture to spring up above the earth. We perceive the preparations made by Nature for restoring in a few weeks to the meadows their verdure, to the trees their foliage, and to the gardens their flowers. She is silently laboring to bring back the spring, though storms, and hail, and frosty nights still retard its approach. In a short time she will put off her dull and gloomy aspect, and appear clothed in all the charms of youthful beauty.

It is thus that all the changes in Nature are gradually produced. Every effect that we observe is prepared by many previous effects; and a thousand little circumstances, which escape our notice, succeed each other till the designs of Nature are accomplished. A multitude, nay, an infinite number of springs must be put in motion before a single blade of grass can spring forth, or a single bud can be unfolded. All those changes which, during the winter were so disagreeable to us, were necessary to ensure us more pleasing prospects. Tempests, rain, snow, and frost were requisite to refresh the earth, to repair its exhausted strength,

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Gradual departure of winter.

and enable it to bring forth new productions: neither could these productions have taken place earlier or later, more suddenly or more slowly, nor have been of longer or shorter duration, without injury of some kind to the fertility of the earth. Now that the advantages of these arrangements of Nature begin to be manifest, we perceive the ends for which they were designed. The consequences of winter thoroughly convince us of its great utility to the earth.

As the seasons vary, so also the periods and events of our lives are continually changing. In the life of each individual there is such an incomprehensible concatenation of causes and effects, that eternity alone is able to remove the veil, and to shew why certain events are necessary and beneficial. Perhaps I cannot now conceive why God has caused me to be born of such parents rather than of others; why this town, and no other, should be my birth-place; why I should embrace this or that particular profession in preference to all the rest. All these things, when they occurred, were mysteries to me; but now I can comprehend that the past was necessary for the present and the future, and that many events, which seemed totally inconsistent with the plan of my life, were nevertheless essential to the happiness which I at present enjoy.

I am continually approaching nearer to that moment when all the events of my life shall be cleared up and explained; and perhaps I am very near that period when the winter of my life shall draw towards its close, and I shall be removed to a new world. O God, my Father! let my heart then be filled with hope and joy, and when this terrestrial

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creation shall vanish from my sight, grant me such a prospect of a blissful futurity as shall exalt my spirit above all vain and perishable enjoyments.

MARCH 6.

OF THE EXTERNAL PARTS OF THE HUMAN BODY.

Now that Nature does not yet appear in all her beauty, that the fields and gardens are not yet decked with those charms which afford such gratification to the mind, I will consider the conformation of the human body. This subject will afford me ample cause to acknowledge the wonders of the divine power and wisdom, and at the same time will teach me to appreciate the just value of this mortal life.

Among the visible parts of my body, the head is most conspicuous, not only for its beauty, but likewise as being the centre of sensation and motion. On the face, the most beautiful part of man, are depicted all the emotions and passions of the soul, and there also are placed the organs of the principal senses, by means of which I receive the impression of external objects. The various motions of the lips and tongue enable me to produce different inflexions of voice and sound. By the assistance of the teeth I can either cut or grind my food; and the great number of glands in my mouth serve to secrete the saliva, which is so necessary for digestion. Under the head is the neck, on which it moves and turns, as upon a pivot, in every direction. To the neck succeed the shoulders, which are so constructed as to be capable of carrying heavy burdens.

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Of the external parts of the human body

To the shoulders are attached the arms, and to these the hands, which are formed in such a manner that we can use them, as occasion requires, either to lay hold of objects, to lift, to repel, or to move them. Numerous joints and bones support them, and facilitate their motions. The chest contains the heart and the lungs, and on this account it is constructed of strong and solid bones and ribs. The diaphragm separates the chest from the belly, in which are the stomach, the liver, the spleen, and the intestines. This mass is supported by the hips, the thighs, and the legs, which, like the arms, are provided with various joints to facilitate the purposes of motion and rest. The feet sustain the whole, and to this end the toes also contribute, as they give the foot a firmer bearing upon the ground. The flesh and the skin cover the whole body, and the hair which grows in different places, protects various internal parts from the prejudicial effects of cold.

How various are these external parts of my body, and yet they are only the principal and the most essential! Their form, their structure, their order, their situation, their motions, and their harmony are incontestable demonstrations of the wisdom and goodness of my Creator. Not a single part of my body is useless or imperfect; neither is any of them detrimental to the rest, or placed in a wrong situation. On the contrary, the smallest change in any of its parts would render my body much less perfect than it is. Were I deprived of the use of my hands, or were they not provided with such numerous joints, how few of the things which I now do, should I be capable of performing. Were I only a rational reptile or quadruped, I should be unfit

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for many arts and employments, I should be unable to move or turn myself with such facility, or to contemplate so conveniently the glorious face of heaven. Had I but one eye, placed in the middle of my forehead, I could look neither to the right nor to the left, nor embrace so wide a space, nor see so many objects at once. If my ear were in a different situation, I should not be able to hear what is passing, both before and behind me. In a word, all the parts of my body are so constructed and arranged as to contribute toward the beauty and the perfection of the whole, and to accomplish the different purposes for which they were designed.

At this moment, O my great Creator, I thank thee for having made me in so wonderful a manner! I am deeply sensible of the blessing thou hast conferred in giving me so perfect a body. O may this sentiment ever remain deeply impressed on my heart! May it, at least, be renewed whenever I survey my body, or make use of my members! Then assuredly I shall not employ them in any manner that is contrary to the purpose for which thou hast given me them. I should, on the other hand, employ my body, my members, and their different parts for the benefit of society, and be continually attentive to glorify thee with body and soul.

It behoves me so much the more to make this noble use of my body, as it will be restored to me in a state beyond comparison more perfect, after it has been consigned to the grave. Shall I, then, dishonor a body, for which in a future life so glorious a condition is reserved? Shall I profane a body which shall once be like the glorious body of Christ? Shall I abuse the members which are des-

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tined for such sublime occupations? O no! even here the blissful hope of future glory shall excite me to devote my body and all its members to thy service, and to preserve it, as thy temple, pure and irreproachable, till the day of the coming of Jesus Christ.

MARCH 9.

THE HOPE OF SPRING.

EACH day brings me nearer to the pleasures of spring, and strengthens in my heart the hope of soon beholding the arrival of those days, when I may inhale the fragrant breeze, and contemplate Nature with greater satisfaction and joy. This hope is almost the only terrestrial expectation that does not deceive, because it is founded on the invariable laws of Nature. Every heart participates in the pleasures which it yields; for the beggar, as well as the monarch, may look forward with joy to the approaching spring, and promise himself infallible gratification. This hope is not accompanied with impatience, because it is widely prospective, and extends to an infinite multitude of objects. The arrival of spring affords us many new pleasures, such as the beauty and perfume of the flowers, the warblings of the birds, and especially the spectacle of the joy which animates all Nature. Most of our earthly hopes are attended with anxiety; but the hope of spring is not less certain and satisfactory than it is pure and innocent: and, on the contrary, often confers on us greater and more numerous blessings than we could have expected.

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The hope of spring.

In these tempestuous days, therefore, I will indulge the fond hope of spring, and the joy which its approach inspires. It is a great blessing of bounteous Providence, that, in all the revolutions of the seasons, and in all the vicissitudes of my lot, my heart is still soothed by hope. The winter which now draws toward a conclusion would have been infinitely more dismal, had it not been for this cheering prospect, which prevented me from repining. Encouraged by the hope of spring, I endured with patience the inconveniencies of the cold and the inclemency of the weather; and now I am on the eve of beholding it accomplished in fullest measure. After a few more disagreeable days, the heavens will become more serene, the air milder, the sun will re-animate all Nature, and the earth be again clothed with all her charms.

Most gracious God, I thank thee for this source also of joy and delight, which thou hast given to cheer my heart, and mitigate the afflictions of life. With what benignity dost thou conceal from my view the evils which hover around me, but on the contrary, shewest me at a distance the blessings and pleasures which thou hast destined for me! Without hope, the earth would truly be a vale of tears, and my life an uninterrupted series of misery. Thou gavest me hope, as the most agreeable of companions during my pilgrimage. When deep gloom surrounds me on every side, Hope presents to my view a prospect of future happiness, which encourages me to pursue the dark and joyless path of life. O most gracious Father, how often hast thou, by her means, raised my drooping heart, and cheered my sinking spirits! I thank thee for

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every ray of hope that has invigorated my soul, for every blessing that I have not only received at thy hand, but also for those which thou hast in store for me. And what terms can express the greatness of that hope which, as a Christian, thou hast permitted me to indulge! Blessed be thy mercy, my Redeemer, who hast procured for me the right of expecting joy and felicity which are not confined within the narrow limits of this life. Blessed be thy name for the hope of eternity which thou hast acquired for me. Without this, of what value would be my life, and all the pleasures and happiness which this world affords, if I could not indulge he delicious hope of everlasting life, of being a partaker of eternal bliss! Having this hope, how light appear all the afflictions which I have to endure here below! Let the winter of my life be ever so long and severe, I will cheerfully await the spring, and the renewal and perfection of my state in a future world.

MARCH 10.

HOAR FROST.

It is very common at this season to observe the bushes, and other objects exposed to the air, powdered, as if with sugar. This is called hoar frost; and is nothing but exhalations, frozen and condensed by the coldness of the surrounding air. They descend every night in dew, though sometimes it may be scarcely perceptible. Its fluidity can be attributed only to heat. But how soon does a body lose its heat, especially if it be small and delicate, and if it come in contact with another

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Hoar frost.

body considerably colder than itself! In the cold nights of spring, the small bushes and shrubs must necessarily lose more of their warmth than thick branches. It is, therefore, natural that the hedges and grass should be covered with hoar-frost, while large trees are always exempt from it. When the dew descends upon bodies that have lost a considerable portion of their heat, it immediately communicates its own heat to these bodies. What else can, be the consequence, than that, as the dew is deprived of the cause of its fluidity, its particles are condensed, congeal and form a thin coat of ice. If other vapors which are not yet frozen come in contact with those which are, they immediately congeal, and placing themselves irregularly one upon another, form the phenomenon distinguished by the name of hoar-frost.

From this explanation it is easy to conceive how it happens that the hair of animals and men is sometimes covered with hoar-frost. The exhalations from the nose, the mouth, and the perspiration of the body, if they adhere to the hair, and are exposed to the action of cold, produce this kind of hoar-frost. The same applies to buildings, which we frequently see covered in winter with transparent fibres and flakes. If the walls of the building have a sufficient degree of cold, the aqueous vapors which settle upon them cannot fail of being congealed. Hence this phenomenon is not observed in intense frosts; for under these circumstances the vapors are frozen in the air, and if they were to alight upon the wall they could not adhere to it, because they come in contact with it only in a small number of points. It often happens, however, that even in the most severe cold, the walls appear

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as though they they were covered with snow. This is a certain sign that the weather will become milder.

In this phenomenon also, O Christian, acknowledge the wise and beneficent designs of thy Creator. In his hand, and under his gracious government, all the operations of Nature, at every season of the year, tend to promote the fertility and the well-being of the earth. Each individual phenomenon is a link in the grand chain of Nature, and contributes to the perfection of the whole. How reasonable is it, therefore, that in each individual case thou shouldst acknowledge the wisdom of thy God, and magnify his name for each of the blessings he has bestowed!

MARCH 11.

OF THE MEANS BY WHICH THE FERTILITY OF NATURE IS INCREASED.

VARIOUS are the means which the wisdom of Providence employs to fertilize the earth. Sometimes the clouds shower down rain, which softens the earth, purifies the air of noxious vapors, and impregnates the soil with fertilizing humidity. At others, when the earth is deprived of the beneficial influence of rain, a gentle dew refreshes its surface, animates the drooping vegetables, and dispenses fecundity. God has provided that each season should have its peculiar means of producing fertility. The snow which, during the past winter, covered our fields, not only protected the earth from the effects of intense cold, but also contributed to fertilize the soil. The frequent tempests

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in the spring preserve the air from stagnation, dry the ground, and disperse the rain over the surface of the earth. And what beneficial effects result from those storms which in summer strike such terror into timid minds! With every thunder shower the Creator pours forth his blessings upon the earth.

We may safely affirm that scarcely any revolution takes place on the earth or in the air, but what contributes, either directly or indirectly, to the fertility of our globe. Each season brings a succession of phenomena peculiar to itself; and each of these phenomena of nature produces effects, the beneficial influence of which is more or less visible. Even those circumstances which are evidently productive of mischief to certain provinces or districts, contribute to accomplish some benign purpose, and to promote the well-being of the whole. O Creator, infinitely wise and beneficent! in every place and in every season I discover thy tender care and loving-kindness. There is no season of the year but what loudly proclaims the benignity of all thy designs.

O Lord of the seasons, thy praises resound from the earth to the heaven of heavens. Our globe pursues its course, now blooming with flowers, now covered with snow; here crowned with vine garlands, there covered with golden harvests. It celebrates thy glory, and loudly joins its voice to the harmony of the spheres. When snow and ice convert our fields into desarts, when the tempests howl through the air, when thy lightnings terrify mankind, when torrents inundate the plains, when all the elements seem combined for the destruction of the world, 'tis then thou art providing for the inha-

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bitants of the earth, joy, prosperity, fertility, and abundance.

Here I am led to consider the various means which God employs to fertilize the moral world. In order to lead men to the consideration of the purposes for which he has designed them, to the abhorrence of sin and the love of virtue, God sometimes makes use of gentle, and at others of violent means. Sometimes he thinks fit to awaken the sinner from his slumber by powerful shocks, severe chastisements, and long continued judgments. He speaks to the hardened heart, as to the Israelites on Mount Sinai, with eyes flashing lightning, and a voice of thunder. With others the Lord employs milder means to lead them out of the paths of vanity and sin. He addresses them with the gentle voice of his blessings, and endeavors to win their hearts by tenderness and mercy.

Of all these things I am a living witness. To the praise of thy goodness, O Lord, I acknowledge that thou hast employed all possible means to draw me unto thee. Sometimes thou wast pleased to let me feel the weight of thine anger, and to humble my proud heart with manifold chastisements. Thou afflictedst me with sickness and other calamities in order to awaken me to a sense of my deviations. At other times thou soughtest to draw me to thee by milder methods. Thou gavest me happiness and prosperity, and thy favors descended upon me like the genial showers of spring. But what return have I made for all the pains thou hast bestowed to convert me to thee? Have I produced fruit, like the earth when it experiences the benign influence of the seasons? Alas! my heart resembled a rock, which neither thunder can shake, nor rain soften.

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Most of the means which thou hast hitherto employed to lead me from the paths of error, have proved unavailing. And shall they always remain so? O no; it is high time that I should become more docile and more obedient. The longer my heart continues uncultivated and unimproved, the more my vices and my sins will increase, and the more difficult it will be to eradicate them. One favor I implore of thee, O my God, cease not to labor for my conversion. Whether thou shalt terrify me by thy frowns, or cheer me by thy promises; whether thou shalt draw me to thee by the severity of thy chastisements, or by the mild influence of thy favors; all the means which in thy wisdom thou shalt think fit to employ shall be welcome to me. Grant only that I may be converted to thee, and that I may become fruitful in good works!

MARCH 12.

UTILITY OF THE SEA.

If we take a superficial view of the earth, we might be led to imagine that there is not a due proportion between the extent of the land and of the water. At the first sight, it appears inconsistent with the wisdom and goodness of God that the water should occupy so large a portion of the surface of the globe. We persuade ourselves that it would be more advantageous if the immense space covered by the ocean, the seas, the lakes, and the rivers, were solid land. In this respect, however, as in a thousand others, we betray our ignorance, and the weakness of our judgment.

Were the ocean reduced only to one half of its

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present size, only half the quantity of vapors could of course be exhaled from it. We should consequently not have so many rivers, and the land would not be sufficiently watered, for the exhalations which ascend from the sea bear a relative proportion to its suface, and to the heat which produces them. The Creator has, therefore, with consummate wisdom, made the ocean sufficiently extensive to supply the vapors necessary for irrigating the land; which would not have been possible if the sea occupied a smaller space.

The ocean was formed to be the general reservoir of the waters, that the heat of the sun may draw from it such a quantity of vapors as may either descend in rain, or be condensed on the summits of the mountains, and become the sources of streams and rivers. Were the extent of the ocean less considerable, that of the barren and parched desarts would be much greater, because a less quantity of rain would fall upon the earth, and there would be fewer rivers.

What would become of the advantages resulting to mankind from trade and commerce, if this vast collection of waters did not exist? God never designed that any part of the globe should be entirely independent of all the rest, but, on the contrary, he intended that a mutual correspondence should subsist between all the nations of the earth. To this end, he has intersected it with spacious seas, that men might maintain an intercourse with the inhabitants of the remotest regions. How should we be able to procure many of the comforts and necessaries of life, if we were obliged to convey them by means of waggons and horses? How

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could commerce subsist, unless navigation afforded us the easiest way to carry it on?

I consider it, therefore, as a special proof of the goodness and wisdom of my Creator, that he has divided the water and the land in the most advantageous manner. Though I may live at ever so great a distance from the ocean, yet I daily enjoy the benefits which it procures.

O that I were more thankful to the Almighty for this blessing also! O that the conviction of his wisdom and goodness, which the heavens, the earth, and the sea combine to produce, might excite me to glorify his name! O Lord, my heart is disposed to render thanks to thee! Grant me grace, that my gratitude may be acceptable in thy sight. But perhaps this blessing has not made so deep an impression upon my heart as it ought. How many nations are perhaps more deeply sensible of its value, and are more sincerely thankful for this proof of thy bounty: but were no people whatsoever mindful of thy favors, the sea itself would attest thy power, and proclaim the wonders of thy goodness; for all that thou hast created, the sea as well as the earth, with all their inhabitants, celebrate thy glory, O thou all-bountiful God!

MARCH 13.

OF THE DIFFERENCE BETWEEN ANIMALS AND PLANTS.

THE difference between animals and plants is so great and obvious, that it may be discovered on the slightest examination. The most striking distinction certainly consists in this, that the animals

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possess the faculty of moving and changing their place, while the vegetables are totally deprived of that power. A still more essential difference, however, is the faculty of feeling, which can neither be denied to animals, nor assigned to plants. To these must be added the method of nourishment, in which there is a wide difference between plants and animals. By means of their external organs, the animals are enabled to select aliments adapted to their nature; while the plants are obliged, without choice, to take such nourishment as the earth presents to them. This nourishment is furnished them by the humidity of the earth, and the vessels of the leaves likewise absorb the moisture of the atmosphere. The number of species is much greater in the animal than in the vegetable kingdom. Among the insects alone there are probably more varieties (most of which cannot be distinguished with the naked eye) than there are of visible plants on the surface of the globe. The animals have much less conformity with each other than the plants, which, on account of their great resemblance, are difficult to be distinguished and classed. Another circumstance in which the plants and vegetables differ from the animals, is the mode in which they are propagated, and which, notwithstanding the accidental analogies between them, is perfectly dissimilar. And who is there that has not remarked the difference between plants and animals with respect to their place of abode? The earth is the only place in which plants can possibly thrive. Most of them shoot up above the surface of the earth, to which they are attached by roots that penetrate to a considerable depth. Some are entirely buried in the ground, a few grow on the surface of

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the water; but to have any duration, they must all be fixed in the earth by means of roots. Animals, on the contrary, range over the whole world. Innumerable multitudes inhabit the surface and the interior of the earth. Some reside at the bottom of the sea, others rove at random through the abysses of the deep. Many dwell in the air, in vegetables, in the bodies of man and animals, in fluid substances, nay, even in stones. In regard to size, the difference between plants and animals, when compared with each other, is very great. Between the dimensions of the whale and the dimensions of the mite, the interval is much more considerable than that between the loftiest oak and the most diminutive moss. Finally, in the figure and conformation there is the most general and obvious difference between animals and vegetables; and indeed, this difference is so striking, that it is absolutely impossible to mistake an animal for a plant, or a plant for an animal.

Let us not, however, imagine that we have ascertained the exact limits between the animal and vegetable kingdoms, and discovered all the characteristics by which they are distinguished from each other. Nature divides her works by limits scarcely perceptible to the human eye. The perfection of beings increases through many thousand gradations, in such a manner that each species differs but very little from that which preceded it. How narrow are the limits which separate the animal from the vegetable creation! We find some plants that are endued with feeling, and some animals which appear to be destitute of that faculty. Nothing demonstrates this more strongly than the discovery that has been made with respect to corals.

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Difference between animals and plants.

Formerly these marine productions were universally considered as plants: but now we have good reasons for removing them into the animal kingdom, since what was looked upon as a flower, is now found to be a real animal.

Thus all the creatures ascend towards perfection by numberless degrees. The more we multiply our observations, the more fully we are convinced of the difficulty of drawing any positive limits between the mineral, vegetable, and animal kingdoms, and that between most created beings there are more conformities than dissimilarities. So much at least is certain, that the limits which separate the more perfect beings from those which are less perfect, at length become totally imperceptible to our finite intelligence.

All these considerations should convince you, O Christian, that the universe, with the innumerable creatures it contains, is the work of an infinite Spirit. Such harmony, and yet such diversity, such variety, and yet such uniformity as are found in the world, must proceed from an almighty, all-wise, and all-bountiful Being, who created the universe and all that is therein. Lift up your heart towards him. Proceed from the stone to the plant, from the plant to the brute, from the brute to man, and from man ascend to the celestial spirits. From these soar aloft to the infinite, immeasurable, omnipresent Being, the Creator of the earth, the Preserver of plants, the Protector of animals, the Father of men, the King of spirits! Form a conception, if you can, of his greatness! Endeavor to fathom his wisdom!

O Being inconceivably great, created spirits are far too feeble to scan thy works. They are infi-

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nitely great, and he who would recount them must be infinite like thyself!

The less capable, therefore, thou art, O Christian, to form a conception of the wisdom of God, the more thou shouldst endeavor to meditate on his greatness, or what is still better, strive as much as lies in thy power to imitate his goodness. Thou seest that the Eternal excludes not any of his creatures from the participation in his tender care, which he bestows no less on stones and vegetables, than on animals and man. He makes no distinction, but extends his loving kindness to all the works of his hand. Endeavor, O Christian, in this respect also to resemble thy Creator. Imagine not that thou oughtest to occupy the highest rank among created beings, and never treat the creatures which seem to possess fewer advantages with cruelty and tyranny. Seek rather to enjoy with gratitude and moderation all the creatures which the Almighty has allotted for thy use, that in all things God may be glorified through Christ Jesus, to whom be glory, honor, and praise, now and evermore.

MARCH 14.

UNIFORMITY AND DIVERSITY OF THE WORKS OF NATURE.

THE heavens above and the earth beneath continue from age to age invariably the same, notwithstanding the variety of magnificent spectacles which from time to time they present to our view. Sometimes the sky is overcast with clouds, at others it is serene; now it is of a pure azure, and now painted

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with variegated colors. The nocturnal darkness and the noon-day light, the glorious radiance of the sun and the paler lustre of the moon follow each other in regular succession. The boundless expanse of heaven is sometimes destitute of visible objects, and sometimes studded with innumerable constellations. And what various changes take place on our globe! For some months the earth, stripped of all her attractions by the rigors of winter, has displayed a dreary uniformity. Soon shall the spring renew her charms; summer shall exhibit her to our senses in the full effulgence of beauty; and in a few months more, autumn shall pour into our lap every species of fruit. What a varied aspect is presented by the different regions of the globe! Here extends a plain, whose limits and whose beauties the eye is equally incapable of embracing. There rise lofty mountains, crowned with gloomy forests; the vallies, at whose base are watered by numerous streams and rivers. Here yawn rugged precipices; yonder are stagnant lakes; and farther still, impetuous torrents. On every side there is a variety which delights the eye, and fills the heart with the purest pleasure.

The same uniformity and variety exist throughout the vegetable kingdom. All the individuals belonging to it have received one common nature, the same kind of nourishment and growth from their general mother. But what an astonishing diversity appears among them, from the humble blade of grass up to the towering oak. They are all divided into classes. Those of the same class bear a very great resemblance to each other, and yet are infinitely diversified. The same is the case with respect to the animals. All of them are di-

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vided by the infinite wisdom of the Creator into different classes; and notwithstanding their extraordinary analogy in many respects, they have a peculiar organization and conformation. Between man and the very meanest of animals there is a certain degree of conformity. Far as man is exalted above animals in other respects, he enjoys some things in common with them, and even with vegetables. Like them he cannot live without the sun, air, earth, and water. As the plants grow, attain to maturity, decay, and die, so the same law of Nature extends to the whole animal creation, and even to man himself.

If we examine the varieties of the human species, what an astonishing mixture of conformity and diversity we meet with! Human nature is the same at all times and among all nations: nevertheless, each individual in the innumerable multitude distributed over the face of the earth, has a peculiar figure, physiognomy, and qualities of mind, by which he is distinguished from all his fellow-creatures. It would appear that the wisdom of the Creator intended to produce the utmost possible variety that is compatible with the uniform structure of each distinct species. All the created beings of our globe are divided into three classes: minerals, animals, and vegetables. These classes are subdivided into genera, the genera into species, and each species comprehends an innumerable multitude of individuals. Hence there is not a creature on the earth that is the only one of its kind, or has no relation to others of the same species; nor is there any species but what has some connection with other species, or certain relations to the world in general.

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Uniformity and diversity of the works of Nature.

From this infinitely extended uniformity and variety in Nature, arise the order and beauty of the universe. The division of the creatures of our globe manifests the wisdom of the Creator, who has assigned to each of them a particular rank and station, and rendered it impossible for them to destroy the distinctions and connections which he has established. Even the smallest works of Nature, which we cannot perceive with the naked eye, display such a combination of uniformity and variety, that the soul is irresistibly led to the contemplation of the infinite wisdom of the Creator.

Yes, Lord, thou hast wisely arranged all things for the pleasure and the advantage of thy creatures. Now, though I have taken but a superficial view of the variety of thy works, I am lost in astonishment. What should I feel, were I capable of penetrating deeper into the essence of beings, and to make myself more perfectly acquainted with their structure? Yet, O Father of light, O eternal source of wisdom, I praise thee for the small degree of knowledge thou hast permitted me to attain. Grant that it may ever be my most agreeable occupation to contemplate thy wonderful works, and to discover thee in every object in Nature. Soon shall the earth present the spectacle of the varied beauties which spring diffuses over these regions. I rejoice at the approach of that moment. With what new sentiments of thy wisdom and goodness shall my whole soul be filled!

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MARCH 15.

OF SEEDS.

ALL vegetables spring from seeds, though few of them are sown by the hand, or discovered by the eye of man. They are strewed by Nature herself. With this view, she has provided many seeds with light down, that they may be wafted and dispersed by the winds. Some seeds are small and so heavy, so as to fall immediately to the ground without any assistance. Others which are larger, and light enough to be borne along by the wind, are furnished with little hooks, by means of which they lay hold of different objects, that they may not be carried too far from their proper soil. Again, other seeds are enclosed in elastic capsules, which bursting open when touched, or when they acquire a sufficient degree of dryness or humidity, discharge their contents to a considerable distance. Nay, what is still more astonishing, Nature appears to have committed to birds the care of planting trees; for they sow the seeds, which spring up and grow. Ravens have been seen to plant acorns, first making, with their bills, a hole in the ground, into which they drop the acorn, and then covering it with earth and moss. It must not be imagined that these birds take this trouble with the intention of planting trees; they are impelled by instinct alone. They conceal the acorn for the purpose of food; it springs up and becomes a tree. Various seeds, by their agreeable taste or smell, invite the birds to swallow them; they are carried about in their stomachs, by the warmth of which they are expanded. In this state the birds dis-

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charge them again on the earth, where they spring up, flourish, and produce new seed.

Stop, reader, and admire the wise and tender providence of thy Creator! If the dispersion of the seeds in the meadows and forests were entirely abandoned to the care of man, how desolate would be our fields, and how desert our woods! Observe how, at the approach of spring, the grass and flowers shoot forth above the earth, unaided by the industry of man. Bountiful Father, how great is thy love, how admirable thy wisdom!

Yet these are not all the wonders that we discover in the consideration of seeds. This circumstance likewise deserves our attention, that the whole plant, however lofty and extensive it may become, is nevertheless comprized in the small space of the seed. The rudiments of the oak, the monarch of the forest, with all its foliage, branches, and roots, are comprehended in an acorn. Nay more: as the preservation and propagation of the whole species depends principally upon the seed, the Creator has carefully provided for its protection. In those vegetables which remain the whole year in the earth, with what precautions are the blossoms and seeds enclosed during the winter in their buds, and defended by strong tunics! And those plants which cannot endure the cold of winter, how carefully are they preserved beneath the surface of the earth, with their roots and fruit, till the warmth of spring causes them again to shoot forth. Some seeds are lodged in the middle of the fruit; others are inclosed in hulls, or ligneous shells; but each s defended in the manner that is best adapted to its nature.

O my Creator, in every part of thy works do I discover thee! The minutest productions of Na-

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ture manifest thy wisdom and thy goodness. Now, when the husbandman is committing his seed to the earth, let me often reflect with gratitude on thee. 'Tis thou who givest to the seed the power to shoot; thou preservest it from injury from the seasons, and through thee, it affords us in a few months both nourishment and pleasure.

MARCH 16.

MAGNITUDE AND DISTANCE OF THE SUN.

If, reader, you have never yet reflected on the narrow compass of our globe, if you have never sensibly felt your own insignificance, perhaps you may be convinced of both if you attentively consider the immense body which dispenses light, heat, and comfort, not only to our earth, but also to a multitude of other spheres. The sun, situated in the centre of the planetary system, may be regarded as the monarch of many worlds, for such are the planets and their satellites, to which the sun communicates light, heat, and motion. This alone is sufficient to lead us to conclude that his dimensions must be prodigious; and this opinion is confirmed by his apparent magnitude, notwithstanding his immense distance from our globe. But the measurements and calculations of astronomers have removed every doubt that could exist on this subject. From them it appears that the diameter of the sun is more than one hundred times greater than the diameter of the earth; and if this calculation be correct, that luminary must be at least a million times as large as our globe. It would probably be easier to determine with accuracy his real magni-

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tude, were his distance from us not so exceedingly great. Taking the mean between his greatest and least distance from us, it amounts to twenty-two thousand semi-diameters of the earth. The semi-diameter of the earth is nearly four thousand miles, so that the mean distance of the sun from the earth exceeds eighty millions of miles; a distance which perfectly corresponds with the design of that luminary, and the effects which it produces. Some of the planets are nearer to him; but if our earth were in their places, it would be reduced to ashes. Others are so remote, that, if the earth were in their situation, it would be continually enveloped in profound darkness, and absolutely uninhabitable. Nevertheless, we have every reason to believe that both those spheres which are nearer to the sun, and those which are farther distant than the earth, have been designed by the Creator for the habitation of living beings. Their structure or their atmosphere may, probably, differ from ours, or the inhabitants may be of a totally different nature, capable of enduring the extremes of heat and cold.

But perhaps these calculations of the magnitude and distance of the sun may appear exaggerated; for the eye is accustomed to behold nothing so great as the earth on which we dwell, and with which we compare the sun, an orb a million times greater. From the prodigious distance he appears small; and we are therefore disposed to believe our eyes rather than our reason. Had the Creator placed us on a planet as much smaller than the earth as the earth is smaller than the sun, we should think the magnitude of the earth as improbable as we now consider the magnitude of the sun. It is therefore but natural that we should be struck with amaze at the

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dimensions and distance of that luminary. And if, in the examination of a mite or of a blade of grass, we discover so many wonders, how much greater should be our astonishment, when we contemplate a body so immense and so resplendent as the sun!

But it was not merely to excite admiration that the Creator placed this glorious orb in the heavens. This admiration should conduct us to that great Being who is the creator, the director, and the preserver of the sun. Compared with his greatness, that of the sun is less than a point: and compared with the splendor of his majesty, the brilliant rays of that luminary are but a shadow. How great, how glorious, how mighty must be the Lord who made the sun! Endeavor to pursue this idea, you will find in it infinitely more incomprehensibilities than in reflecting upon the magnitude of the sun. If the earth is so small in comparison of the sun, how diminutive must it appear when compared with the Almighty! If the distance between the earth and the sun is so immense, how inconceivably great must be the space between man and the infinite God!

O Lord, who can be compared to thee! No praise can be worthy of thy greatness; no understanding, however sublime, can conceive it. Splendor, majesty, and glory surround thee, the source and life of all beings, and light is thy resplendent garment!

Meanwhile, O Christian, when you behold the sun and enjoy his cheering influence, let it be your constant occupation to praise the Lord, whose master-piece he is. Let this witness of the Deity, whose testimony you may every day see and feel, teach you how worthy of your adoration is the Creator, how tenderly he provides for your

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well-being, and how well he deserves your love and confidence. Let this consideration remind you of your Redeemer, the sun of righteousness, who visited you in the night of your distress, and whose rays impart life and health. The influences of his grace are as necessary to our salvation, as are those of the sun to our physical existence. You would be involved in the darkest night of ignorance, guilt, and despair, had he not, by his doctrine and his redemption, brought light, virtue, and consolation into the world.

MARCH 17.

IMPERFECTION OF HUMAN KNOWLEDGE WITH RESPECT TO NATURE.

WHY has not the Creator conferred on us the faculty of obtaining a more profound knowledge of the phenomena of the corporeal world? It would appear as though the limited knowledge we have of natural objects were inconsistent with his end and design. He intended that we should be acquainted with his perfections, and magnify his name. But how can we become better acquainted with his incomparable attributes, how can we contribute more to the glorification of his holy name, than by endeavoring to obtain a perfect knowledge of the works of the creation? I imagine that I should be the more able to admire the greatness of my Creator, and to advance his honor, were it in my power to gain a complete insight into the concatenation of the whole, the perfection of the individual parts and all the principles of Nature. If I now admire the infinite greatness of my Creator,

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now when I am acquainted only with a small portion of his works, with what awe and veneration should I adore him, if I could penetrate deeper into the science of Nature, and could with more certainty account for all the phenomena she produces!

Of this, however, there may be some reason to doubt. So much at least is certain, that, as God has not thought fit to give me a more complete knowledge of Nature, he is more glorified by me, according to the measure of my present strength, than he could be under any other circumstances. And can it be surprizing, that, in my present state, I am incapable of fathoming the first principles of Nature? The organs of my senses are too feeble to penetrate into the essence of things, and I cannot form a corporeal idea of objects which my senses cannot discern. Nature abounds with such objects as I cannot possibly discover by means of my senses. When I am desirous of figuring to myself things infinitely great and infinitely small in Nature, my imagination is lost. When I reflect on the velocity of light, my senses are incapable of observing that velocity; and when I represent to myself the blood-vessels of insects, whose bodies are said to be a million times smaller than a grain of sand, I am sensible of the weakness of my mental faculties. As Nature ascends from what is infinitely small to what is infinitely great, is it matter of surprize that I am unable to fathom her real principles?

Supposing God had endued me with the sagacity necessary for comprehending the concatenation of all the parts composing the universe, for penetrating into the secrets of Nature, and obtaining a complete insight into her first laws, what would be the

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consequence? It is true that I should have occasion to admire, in its full extent, the wisdom of the Creator in the arrangement of the universe, but that admiration would soon cease. I should perhaps resemble the generality of mankind, whose inconstancy leads them to admire an object no longer than while it appears beyond their comprehension. And if I had a clear and perfect conception of the whole system of the creation, I should perhaps believe myself capable of producing a similar work. In a word, I should not perhaps remark the infinite difference which exists between the Creator and myself, and should thus be prevented from paying him that homage which is his due.

How little reason have I, therefore, to murmur, because the knowledge of Nature which I am capable of attaining, is so imperfect! And, on the contrary, how much reason have I to thank him for this knowledge, limited as it is! Had I a deeper insight into the nature of things, I should perhaps not be so powerfully affected, or so grateful to the Almighty; I should not take such delight in contemplating the works of Nature, or find in them pleasures ever new. But now that I have learned the first rudiments in the volume of Nature, I am sensible of the greatness of my Creator, and my own insignificance. Each observation now increases my astonishment at the wisdom and power of the Deity. I now feel a still stronger desire excited in my bosom to reach that blissful abode, where I shall acquire a more perfect knowledge of God and of his works.

Guide me, O Lord, by thy spirit, that I may make good use of the knowledge thou hast given me, and continually endeavor to augment it. Grant

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that it may not be unproductive, but that it may excite me to serve and glorify thee. To this end, let me perpetually bear in mind that thou wilt judge me, not according to the extent of my knowledge, but the purpose to which I shall apply it.

MARCH 18.

UTILITY OF VEGETABLE PRODUCTIONS.

WHEN I consider the great number and the variety of vegetables on the surface of the globe, I discover in this, as in every other respect, the most beneficent intention on the part of my Creator. What other end could he have in view, when he enriched the earth with so many species of herbs, plants, and fruits, than the pleasure and advantage of his creatures? Such is the variety of plants, that upwards of thirty thousand species have been enumerated; and new classes and species are daily added to the list. Their increase is infinite. Who can withhold his astonishment that, for example, a single grain of Turkey-corn produces at once two thousand others, and that a single poppy-seed multiplies to such a degree, that in two or three years a large field may be sown with its produce? Can it be imagined that, in this prodigious number and surprizing multiplication of vegetables, the Creator had not in view the benefit of his creatures?

To remove every shadow of doubt from this conjecture, I need only mention the use that has been made of vegetables from the earliest ages. The plants and fruits daily supply me with the most wholesome and nutritious aliments. For a great part of my clothing, my habitation, and the im-

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plements which procure me a thousand conveniencies and pleasures, I am indebted to the vegetable kingdom. There is no part of plants but what is of some utility. The roots are employed in medicine, for food, for fuel, for making pitch, for household furniture, and for dyeing. The wood is used for making charcoal, for building, for firing, and numberless kinds of instruments; many kinds are employed in medicine and dyeing, and even in the manufacture of paper. The bark is of particular use in tanning, and also for medical purposes. The ashes serve for manure, for bleaching, and for making salt-petre, and potash is serviceable in dyeing. The resin is useful for balsams, for making pitch, and in painting; the turpentine in medicine; colophony for soldering, and in music, and mastic as a perfume. The flowers which give delight, not only by the beauty of their colors, but also by the fragrance of their smell, are employed in medicine, and exclusively furnish the bees with their honey and wax. The fruits which are gradually matured, serve as food for man, partly raw, and partly boiled, or otherwise prepared.

The various species of vegetables are not only serviceable to man, but are of the highest utility to animals. On a proper supply of them depends the preservation of their lives. Is it not on this account that grass is more abundant than any other vegetable production? And are there not different species of grasses, adapted to the wants of each particular animal?

O bountiful Father, who can express thy goodness! Who can enumerate the blessings which thou hast conferred in the vegetable kingdom on thy creatures. So much, at least, is manifest, that

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all the arrangements of thy Providence in this portion of Nature have for their object the advantage of all the creatures thou hast placed upon the earth. For each thou hast made provision; to each thou hast assigned the plant best adapted for its nourishment and preservation. There is not a vegetable on the earth but what is designed for some end and use. What sentiments of gratitude and veneration ought, therefore, to be excited in my bosom by the spectacle of the fields and meadows! Here are ample stores of whatever is necessary for the subsistence and pleasure of all the inhabitants of the earth. Here, O God, thou openest thy hand and satisfiest every living creature to the full extent of its wishes. Here every blade of grass, every ear of corn, every flower, and every tree attests thy bounty. I will not be deaf or insensible to this intelligible language, but I will taste and see how good thou art, and will encourage myself more and more to place entire confidence in thee.

MARCH 19.

OF THE STRUCTURE OF THE HUMAN HEART.

How admirable and inimitable is the structure of the heart, which is situated within the cavity of the chest. Its figure somewhat resembles that of an obtuse pyramid, and it is placed in such a manner that the point inclines a little to the left side. Its substance is composed of fleshy membranes, interwoven with admirable art, the exterior running from the left side of the heart towards the right, and the interior from the right to the left. In the interior of the heart are two cavities, which are

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called ventricles, and are separated from each other by a thick muscular substance. There is a vein which conveys the blood from the upper parts of the body to the right ventricle of the heart; another to conduct the blood returning from the inferior parts into the same cavity; an artery to propel it into the lungs; and another vein by which it is discharged into the left ventricle, whence it is forced into an artery which distributes it over the whole body. By the right ventricle is a muscular membrane, forming a cavity, into which the blood is discharged before it enters the right ventricle; and another, designed for the same use, is placed near the left ventricle, for the reception of the blood while the heart is contracted.

All the blood is continually circulating through the heart, by means of which it is propelled through all the veins in every portion of the human body. Though all the other parts of the body occasionally take repose, yet the heart is perpetually in motion, from the first to the last moment of our lives. In a state of health it contracts about seventy times in a minute, and consequently upwards of four thousand times in an hour, and each contraction is supposed to propel almost two ounces of blood. The force which the heart is obliged to employ for this purpose is not small; but neither the quantity of force exerted, nor that of the blood expelled, has yet been determined with any accuracy.*

* Dr. Keill in his *Anatomy*, observes, that each ventricle contains at least one ounce of blood. The heart contracts four thousand times in one hour, from which it follows that during the same space of time, three hundred and fifty

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All these things are equally admirable and incomprehensible. But if so much penetration and experience, so much knowledge and attention are necessary only to form an idea of the structure of the heart, how absurd would it be to imagine that he who made it could be ignorant and unexperienced, and that he operated without any fixed object or design? No, thou immortal God, I perceive thy power and thy wisdom in the formation of my heart, and rapt in holy extacy, exclaim: "Great is the Lord! Great is the Creator of man! O God, great and wonderful, Creator of all things, how infinite is thy power!"

O my soul, what transport thou feelest when thou indulgest in these contemplations! O mayst thou always be filled with these sentiments whenever thou considerest the wise structure of thy body! Every breath I draw should remind me of the goodness of God; at every pulsation of the heart, I ought, if it were possible, to thank the giver and preserver of my life. In his hand are all the motions of the blood and the action of the heart. At his command the heart ceases to contract and expand, the blood stops in the veins, and all the functions of life are instantly suspended. In him alone we live, and move, and have our being. Never forget, therefore, O my soul, what gratitude and what love thou owest to the Lord! Devote to

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pounds of blood pass through the heart. Now the whole mass of blood is said to be about twenty-five pounds, so that a quantity of blood, equal to the whole mass, passes through the heart fourteen times in one hour, or about once every four minutes. T.

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him all the members of thy body, and let thy heart be filled with veneration and love towards thy God.

MARCH 20.

OF THE REVOLUTION OF THE SEASONS.

THE hottest and the coldest regions of the earth have only two seasons which materially differ from each other. The coldest have a summer of about four months, during which the heat is intense, on account of the great length of the days; and a winter of eight months. Their spring and autumn are imperceptible, for in the space of a few days extreme heat is succeeded by extreme cold, and intense cold by heat equally intense. The hottest countries have a dry and scorching season for seven or eight months, and a temperate season, with abundant rains, during the remainder of the year; this being the only distinction between their summer and winter.

'Tis only in the temperate climes that there are four distinct seasons in the year. The heat of summer gradually decreases, so that the fruits of autumn have time enough to ripen by degrees, without being injured by the cold of the approaching winter. In like manner, in the spring, the vegetables have time to shoot forth, and slowly acquire strength, without being hastened into premature efflorescence by too early warmth. In Europe, these four seasons are most distinctly observed in the north of Italy and in the south of France. Farther northward and southward, the summer and autumn are more imperceptible, and of shorter duration.

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Of the revolution of the seasons.

Throughout almost all the temperate regions, the summer and winter in general begin with violent rains of long continuance. From the middle of May to the latter end of June, it seldom rains; but after that time, heavy rains set in, and continue till the end of July. The months of February and April are usually very variable. If the melted snow and the rain were to remain on the surface of the earth without running off or evaporating, most countries would be covered in a year to the depth of one foot and three quarters.*

This change of the seasons is one of those that deserve our admiration. It is impossible to ascribe them to chance, for in fortuitous circumstances, there can be neither order nor regularity. But in all the regions of the globe, the seasons succeed each other as regularly as day and night, and change the face of nature at the appointed time. We see the earth successively clothed with verdure and foliage, crowned with flowers and decorated with fruits. It is then stripped of all its beauties, till spring returns to rouse it, as from the sleep of death. Spring, summer, and autumn nourish the animal creation by the fruits which they furnish in abun-

* The reader will perceive the utter impossibility of attaining any tolerable degree of accuracy in a statement so general as that which the author has here attempted, when he reflects how very different is the weather, not only in different regions of the globe, but also in the several provinces of the same country, and how much the seasons vary from one year to another, even in the same province. The average depth of rain that falls in England is considerably lower than the quantity mentioned by M. Sturm; for in the drier parts of our island it does not exceed thirty inches. T.

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dance. And though in winter Nature appears inanimate, yet this season is not without benefit for the earth, which it waters, fertilizes, and prepares for the re-production of fruits, plants, and vegetables of every kind.

Arise then, O my soul, to praise thy God and thy benefactor. With this day commences that season which opens to thy view the most agreeable prospects, and compensates for the gloomy days of winter. Spring daily approaches nearer, and brings with it a thousand pleasures and innumerable benefits. How many of my brethren, who longed for the return of this season, and hoped that its cheering influence would recruit them after the sufferings they endured in the winter, have not been permitted to see this day; before the termination of winter their lives were at an end. Many millions of the inhabitants of the earth have been snatched away from the beginning of winter to the present day, but I still live and enjoy all the pleasures of returning spring. How often have I already witnessed its return, without thinking of the goodness of my Creator, without being filled with gratitude and joy! Perhaps this is the last spring that I am destined to see; perhaps before the return of the equinox I shall be an inhabitant of the grave. May this reflection dispose me to be the more sensible of the blessings which my Creator confers upon me, to be the more deeply affected by his goodness, to enjoy with so much the more precaution the charms of spring, and to husband the more carefully the moments of this fleeting life!

There is another reflection which the change of the seasons may give us occasion to make. As these succeed each other in nature, so also vicissitudes

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succeed each other in the course of my life; only with this difference, that the past never returns. The spring of my youth, the season which was accompanied with beauty, animation, and delight, is over; the summer and autumn of my days, in which I ought to shew to the world my ripe fruits are gradually approaching. Whether I shall live to see the winter of age is very uncertain; perhaps I shall die in the vigor of life. O Lord, thy will be done! If I but walk in the paths of faith and integrity, let death come when he will, I shall have lived long enough, and to good purpose.

MARCH 21.

OF THINGS WHICH APPEAR TO BE OF NO USE.

If an all-wise Providence governs the world, it is natural to suppose that it extends even to the minutest objects and incidents, and that nothing can happen but what is productive of manifest advantage. But how many things are there in the world which are apparently of no kind of utility! The north wind blights the blossoms; they wither and are useless. Seeds which might have produced new plants, perish without producing any fruit. Numberless insects are not only unserviceable, but are extremely injurious to men, animals, and plants. To what end has Providence created such prodigious multitudes of fishes, which destroy one another? For what purpose has it placed in the air and upon the earth the immense numbers of predatory animals which depopulate the empire of the creation? Why has it made so many venomous reptiles which spread death and desolation around? Many hu-

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man beings, as well as animals, have scarcely appeared on the earth before they again quit the scene of mortality. Others are born monsters, or become deformed. How many faculties and talents are suffered to be lost! How many excellent arrangements are frustrated before they have attained to maturity! Could all this take place if the universe were governed by a Being infinitely wise?

But hast thou, O man, who presumest to doubt the existence and government of a divine Providence, hast thou so perfect a knowledge of all things and of their relations with each other, as to say with certainty, this or that is of no utility? Never forget the limited extent of thy faculties. It is thy duty to adore the Lord in silence, not to find fault with him who possesses supreme wisdom, and has manifested it in so many things, the utility of which is eminently conspicuous. Consider also that a thing may be serviceable in various ways, that while it is answering one end, it cannot be fulfilling another. The insect which in its infancy becomes the prey of the swallow, cannot produce a new generation; the unsuccessful researches of the alchymist have not, indeed, rendered gold more abundant; but the former at least supplies the swallow with food, and by the experiments of the latter many valuable discoveries have been made. Thou canst not by thy tears soften the cruelty of the oppressor; but they are not shed in vain; they tend to keep alive in thy heart the tender feelings of compassion. There is a Being by whom they are collected, and who will reward thy virtuous endeavors with a crown of unfading glory.

Never imagine, then, that any thing in the world is entirely useless. There may, indeed, be certain

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things, which appear not to succeed, or not completely to answer the end for which they seem to have been designed, but yet they actually accomplish the precise purposes of the Almighty in their creation. There may be cases in which God appears not to have completely attained the objects which he proposed to himself. It may be that one thing cannot be effected without the apparent failure of another; and that the latter does not perfectly accomplish the end which is answered by the former till after the trial of many other apparently fruitless expedients. If, however, it be true that genuine wisdom is not entirely engrossed by the present but extends its views to the future; that God is supremely wise, and that the world is a mirror of his wisdom; there must occur things which to us short-sighted mortals do not appear perfectly to accomplish their destination, because other causes are required to co-operate with them. The part which these things contribute to the execution of the whole plan, may be so imperceptible and so little known to us as to pass for nothing in our estimation, and even to be entirely overlooked. Nevertheless, it does not follow that they answer no end in the system of Nature, or are perfectly useless. It proves, on the contrary, that God could not be infinitely wise, that he could not have acted upon a well-regulated plan, unless such things as appear unserviceable to us frequently occurred.

This persuasion, my dear reader, will greatly contribute to your tranquillity and happiness. In nature and in the course of human life, events are daily occurring whose connections and design you are unable to comprehend, and which, on this account, you are sometimes disposed to consider as of

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no utility. In this case, it cannot be otherwise but that many things must be disagreeable to you, and weaken your faith in God. But the more you are convinced by reason, by daily experience, and by the testimony of the sacred scriptures, of the wisdom and goodness of the divine government, the more contented will you be both in prosperity and in adversity. You will then find no difficulty in acknowledging that whatever God himself does or permits to be done, is for the wisest purposes, and contributes in some way or other to the benefit of the universe. And when you observe so many trifling objects in nature, so many events which appear diametrically opposite to the plan of the Almighty, instead of arraigning, you will adore the wisdom displayed in all his dispensations, and render him the glory that is so justly his due.

Never did he yet commit a mistake in his government of the universe. Whatever he does or permits is ultimately of benefit. Rely then upon his wisdom, and suffer him to act as he thinks fit, without cavilling at his dispensations; so shalt thou live peacefully here below, and in heaven enjoy everlasting bliss!

MARCH 22.

HARMONY OF THE PHYSICAL AND MORAL WORLD.

THE wisdom of God has perfectly adapted the earth and its inhabitants to each other. In all the works of God there is a mutual harmony and adaptation. The nature of man and the surface of the earth have a striking correspondence and analogy with each other. As the bodies of plants and ani-

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mals are formed, grow, arrive at maturity, and decay, so also those of men are subject to the same changes. And as there is a great diversity of climates and of soils, some being fertile and others barren; so also there is a similar variety in the minds, the talents, and the faculties of men. Such was the plan of the Creator of all things, and in this diversity there is more of wisdom and goodness than we may at first imagine. Instead of appearing a defect, we should think it a beauty or an excellence, if we possessed a perfect knowledge of things. If any one should be disposed to object: Why has not God given to all men the same faculties and the same degree of intellect? we might reply: Who art thou, blind mortal, that presumest to call to account the God who made thee? Shall the creature say to him who created it: Why hast thou made me thus? We might ask, why the Almighty did not make all the regions of the earth equally pleasant and fertile; why some districts are blessed with a rich and productive soil, while others are so barren, as to blast every hope of improvement or fecundity. We should not doubt that this diversity is highly beneficial and worthy of our adoration, though it is not always conformable with our way of thinking. The most inhospitable and the most desolate regions of the earth have their beauties and their uses in the eyes of the Creator, and so have the rudest of nations, the most uncivilized savages. All of them occupy the place best adapted to them in the immense theatre of Nature, and their variety serves to display the manifold wisdom of God.

But as it is evidently the intention of divine Providence that the earth should be cultivated, and produce abundance of fruit for the subsistence of

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men and animals, and as he has to this end given us corn to be sown in the earth, so it is equally or still more conformable with his design, that the minds of men should be cultivated or rendered fruitful, so as to produce an abundant harvest of wisdom and virtue. For this purpose, he has given them the precepts of genuine religion, which, if they find a soil prepared to receive them, produce exquisite fruit, like good seed sown in fertile land. Hence it is that the gospel can only operate in proportion to the natural faculties of men, and the disposition with which they receive it.

Vast tracts of land are still steril and uncultivated, notwithstanding all the means which Providence employs to promote their fertility. In like manner, notwithstanding the publication of the gospel, how many nations are still involved in the most deplorable ignorance? Even in the most polished nations of Christendom its effects are extremely various, and must ever remain so, on account of the difference of character which subsists between individuals. Some there are who neither understand nor have any idea of the saving power of the truths of our holy religion. Others receive them with eagerness and joy; but the impression is not lasting. Some suffer worldly passions and concerns to grow up with it, and destroy the hope of the future harvest. Very few receive the gospel with an upright heart and a thorough conviction, and to these only it is the power of God unto salvation.

To which of these classes do I belong? What effect have the truths of the gospel produced upon my heart? What fruit has its seed brought forth

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in my soul? These are questions which it behoves my conscience to answer with candor and honesty; but my conduct itself affords the best reply.

MARCH 23.

OF THE NATURE AND PROPERTIES OF AIR.

THE air is a subtle fluid which surrounds our whole globe, and which all living creatures respire. Though it is so close to us, and we are continually experiencing its effects, yet we cannot precisely determine its nature.* So much we know, that the air must be a material substance, for by moving the open hand with rapidity towards the face, we feel it very perceptibly. It is equally undeniable that the air is a fluid, that its particles are not attached to each other, and therefore yield to every kind of motion and pressure. Were the air, on the contrary, a solid, we could neither inhale it, nor

* The indefatigable researches of modern chemists and natural philosophers have proved that the air of the atmosphere is not, as was formerly supposed, a simple fluid, but that it is composed of two different fluids, which have been described by the appellations of azotic and oxygen gas, or phlogisticated and vital air. One hundred parts of atmospheric air contain about seventy-two parts of azotic gas, twenty-seven of oxygen, besides one part of carbonic acid gas, or fixed air, which is generally found united with them. Thus the air of the atmosphere may be said to comprehend rather more than one fourth of pure or respirable air, while the remaining three fourths are unfit either for respiration or combustion, since the same fluid which supports flame, is found equally to contribute to the support of animal life T.

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move in it with facility. Gravity is a property which it possesses in common with all bodies. Though its weight to that of water is as one to eight hundred and eighty-five, its gravity is, nevertheless, very great. According to M. Paschal, the pressure of the atmosphere upon every square foot of surface is not less than two thousand two hundred and thirty-two pounds, or upwards of fifteen pounds upon every square inch. The surface of a man's body, six feet high, is computed at fifteen square feet, so that the pressure of the air which he continually sustains is nearly equal to thirty-three thousand, four hundred and eighty pounds. This may perhaps appear incredible, because we imagine that we must, of necessity, feel so prodigious a weight of air. We should undoubtedly be crushed by it in a moment, if every part of the body were not filled with air, or some other elastic fluid, the spring of which is sufficient to counteract the pressure. The elasticity of air is not less certain than its gravity. It is continually endeavoring to expand itself, and though it is compressible, yet as soon as the pressure is removed, it again dilates. Fire and heat produce this effect in air; by their means it may be made to occupy five or six hundred thousand times more space than before, without losing the least portion of its elastic property. All these phenomena are highly worthy of admiration, and the causes of many astonishing effects. It is the air that supports our globe and keeps it in its orbit. It is in the air that the clouds are collected, forming such a variety of figures, and tinged with so many colors, and which, as they are rarefied or condensed, either retain their humidity, or pour it forth upon the earth in rain, hail, and snow. Without air our

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senses would be useless; nay, it would be impossible for us or any other animals to live upon the earth. Without it nothing vegetable could grow, nor could fire or water exist.

O adorable Creator, the air also announces to me thy power, wisdom, and goodness! Who else could have rendered that element fit for so many objects, and for such multifarious uses? Who else is the monarch of the rain and of the snow, of the wind, of thunder and of lightning? Yes, it is thou, O Lord, who art the maker of all these. I admire the depth of the riches of thy wisdom and intelligence which are manifested also in this arrangement of Nature. With what wisdom hast thou weighed the air, as in a balance, and given it an organization which could not possibly be improved! Shall I, who am continually inhaling the air, which is so essentially necessary for the preservation of life, and who am incessantly enjoying its benign influences—shall I be insensible to thy bounty? Would not such ingratitude render me unworthy of the many blessings which thou conferrest with each breath I draw? No; to thee my praises shall ascend with those of all thy other creatures. I will celebrate thee, O Lord, while I live, and will extol thee, O my God, while I exist. Praise the Lord, O my soul! Hallelujah!

MARCH 24.

THERE IS NOTHING NEW UNDER THE SUN.

WITH respect to man, many new things take place on the earth. In every season Nature commands new flowers to blow, and new fruits to ripen.

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There is nothing new under the sun.

The theatre of Nature changes from year to year. Each day produces new incidents and new vicissitudes; the state of things is daily undergoing alteration; at least they are presented to our senses under different forms.

But it is true only with respect to our very limited intelligence that any thing new takes place under the sun. Nothing, in fact, is more true than the saying of Solomon: That which hath been is now, and that which is to be hath already been; what hath been done shall be done; and there is nothing new under the sun. God, whose wisdom is infinite, has not thought fit to multiply things unnecessarily. We have as many as are requisite to supply our wants, to afford us pleasures, and to gratify our curiosity. So far from exhausting, we cannot even obtain a superficial acquaintance with all the works of the Creator. Our senses are not sufficiently acute to penetrate into all the works of Nature, and our understanding is too weak to form a just conception of all created objects. Hence it is that we often believe many things on the earth to be new. For, as the empire of the creation is immense, and we can embrace but a very small part of it at one view, we consider every thing we behold for the first time as new, because the Creator has given to every part of the world an infinite variety of appearance and scenery.

The world requires not a continued and endless creation: 'tis sufficient that the Supreme Being preserves the order which he at first established. God is an artist who has occasion for a small number of springs to vary his works, which are, nevertheless, so infinitely diversified as to appear always new. Let us be satisfied to enjoy his works with gratitude,

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without attempting to fathom their depth, or to measure their prodigious extent.

The immensity of the works of Nature, and the impossibility of conceiving their full extent, prove that the universe is the production of an almighty hand, and at the same time demonstrate the weakness of the human understanding.

But it may be asked: Have not the moderns made many discoveries which were totally unknown in the ages of antiquity? Are we not now acquainted with many phenomena in all the kingdoms of Nature, of which our forefathers had no idea?—Most of these discoveries were owing rather to our wants than to our sagacity. As our necessities increased, we had to seek new means of supplying them; and these Providence enabled us to find. But these means existed before we became acquainted with them. The newly discovered minerals, plants, and animals were lodged in the bosom of the earth or upon its surface, before the enquiries and researches of men brought them to light: nay, we even know that the ancients touched with their fingers, if I may so express myself, many of the discoveries on which we pride ourselves so much.

Were the world the work of chance, we should from time to time behold new productions. What then is the reason that new species of animals, plants, and stones, are not continually starting into existence? 'Tis briefly this: because the universe was arranged by the infinite wisdom of God; and all that he has made is so good as to require no renewal, no alteration. The creation is sufficient to supply us with every necessary and every convenience. Nought was made at random, but all things were determined in the counsels of infinite wisdom,

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and are linked together as in a chain. The whole universe is preserved by the government of the Creator, and by the concurrence of general and individual laws. Every thing bears the stamp of wisdom, order, and beauty. In all and by all the Most High is magnified. To him be glory in eternity!

MARCH 25.

OF CAVES IN MOUNTAINS.

CAVES are most frequently found in mountainous regions, and scarcely ever in plains. They are formed, like precipices, either by the sinking of rocks, or by the action of fire. It is, therefore, possible, that caves have the same origin as earthquakes. One of these phenomena, as well as the other, may be produced by the eruptions of volcanoes, and by the action of subterraneous vapors. These must necessarily occasion convulsions, which, of course, form all kinds of caves, holes, and apertures.

But for what purpose are these chasms? Supposing, reader, that it were impossible for you to discover any utility in them, you may, nevertheless, rest assured, that they could not have been formed but for the wisest ends. As nothing in the universe is without its utility, can these phenomena have been produced by the Almighty for nothing? But you may be convinced by the evidence of your eyes for what uses these caverns were designed. They serve as reservoirs for the waters, which are thence distributed over the earth when it is not refreshed by aqueous vapors. The caves of the mountains keep

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up the circulation of the waters in their subterraneous channels. When these are choked, convulsions which spread terror and desolation, are the consequences.* The air inclosed in the bosom of the earth escapes by holes and caverns. These chasms are therefore necessary to afford the air access to the mountains, to give a passage to the winds, and furnish an outlet for exhalations. For if the apertures of caverns and their interior vents were not to produce a free circulation, the inclosed air would be corrupted, or shake and convulse the earth. Nature has filled many of these caverns with water, whence arise rivers and lakes. Such is the lake of Cirknitz in Carniola, which is full at certain seasons, and at others retires, so that the inhabitants can raise crops of corn, and hunt in it. How many animals would perish, did not the caves of the mountains afford them in winter an asylum and abode! How many minerals and other useful productions, which cannot be formed or matured, except in these cavities, should we be deprived of, if there were none of these chasms and apertures in mountains!

* A tremendous catastrophe of this kind occurred on the 2d of September, 1806, in Switzerland. A vast rock forming the summit of a mountain called Rosenberg, in the canton of Schwitz, was suddenly detached from its situation, and carrying with it part of the mountain, fell into the valley separating the lake of Zug from that of Lauwertz. Several villages were buried beneath the overwhelming mass, and near five hundred of their peaceful inhabitants perished. This fatal accident was occasioned by the accumulation of subterraneous water, and was accelerated by the quantity of rain which had fallen for some weeks previous to the event. T.

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Thus you see, my dear reader, that also in this phenomenon of Nature the wisdom and goodness of our Creator are manifested. It furnishes a new proof of this truth, that in Nature there is nothing useless, nothing superfluous, nothing but what was made for wise purposes. The more you accustom yourself to this idea, the more you will adore the sublime perfections of God in all the works of Nature. Strive then to impress this conviction more and more deeply upon your mind; and let it be your primary study, on beholding all the objects and phenomena which you may discover, either on the earth or under the earth, to admire and to celebrate the wisdom, the goodness, and the power of your Creator.

MARCH 26.

OF THE CIRCULATION OF THE SAP IN TREES.

The trees which for several months appeared quite dead, now begin gradually to revive. In a few weeks I shall be able to discover in them more evident signs of vitality; and in a short time the buds will swell, expand, and produce glorious blossoms. This revolution I have observed at the commencement of each successive spring; but perhaps I have hitherto been ignorant of the means by which this truly astonishing change in trees is produced.

The effects observed in spring in trees and other vegetables, are occasioned by the sap, which is set in motion in the vessels by the air and the increased warmth. As the life of animals depends upon the circulation of the blood, so the life and growth of plants and trees depend on the circulation

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of the sap. To this end, all the parts of vegetables have been so formed, organized, and arranged by the Deity, as to conduce to the preparation, motion, and preservation of the sap.

It is principally by the bark that the sap ascends in spring from the roots into the trunk of the tree, nay, even that through the whole year life and nourishment are imparted to the branches, and the fruit which they bear.* The wood of the tree likewise contains very minute fibres, which run longitudinally through the whole stem, and are most intimately united to each other. Some of these are so fine and delicate, that one, scarcely the size of a hair, contains more than eight thousand smaller fibres. Numberless small vessels are provided to facilitate the circulation of the sap. These tubes extend through the whole length of the trunk, and also through all the branches of the tree. Some convey it from the roots to the summit, and others return it back to the roots. During the heat of the day the sap rises through the ascending tubes, and returns through the descending ones in the cool of the evening. The leaves answer the same purpose. Their principal use is this, that the sap which as-

* Recent experiments made by Coulomb, in France, and Knight, in England, seem to demonstrate, that the idea of the circulation of the sap through the bark of trees is a mistaken notion, and that it ascends and returns exclusively through the vessels of the wood or alburnum, as it is denominated by Dr. Darwin, in order to distinguish it from the heart. This result of the investigations of those naturalists is confirmed by the simple observation, that in order to obtain the sap from any tree, by means of incision, it is absolutely necessary that the wound be made deeper than the bark, so as to penetrate the alburnum. T.

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cends from the roots, as well as that which the tree absorbs externally from rain, dew, and the humidity of the atmosphere, is concocted and prepared by their assistance. This sap is then distributed through every part of the tree.

But the sap could not ascend in the tubes unless they had outlets above. Through these pores the aqueous parts of the sap are continually transpiring; while the oily, sulphureous, and earthy particles blending together, nourish the tree and promote its growth. If the circulation of the sap is suspended, if the internal organization of the tree is destroyed by intense cold and frost, by age, or by external injury, death is the consequence.

After these reflections, is it possible that I can behold the trees at this season with the same indifference as heretofore? Can the revolution which will speedily take place in them appear beneath my attention? And can I observe the renovation of all Nature, without thinking of God, who gives life to all his creatures, who provides the trees with appropriate juices, and has communicated to them the power of circulating through numberless channels, and dispensing life, vigor, and nourishment? That it is possible to see all these things year after year, without paying attention to them, is a truth of which I am myself a living demonstration.

Often have I already witnessed the re-animating effects produced in trees and plants by the return of spring: but, alas! I have thought no more about them than the cattle grazing in the field. Nay, what is still more astonishing, I have reflected as little upon the preservation of my own life, the growth of my body, and the circulation of my blood.

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May I, however, now that I have the happiness once more to behold the return of spring, think more like a rational being and a Christian! May I discover in all the works of Nature, that beneficent Creator, who is not far from me, but proclaims his greatness in each of the works of his hand.

But all my wishes will be unavailing, unless thou, O God of all grace, thyself inclinest my heart to acknowledge and glorify thy great and holy name. Now that life and joy reanimate all Nature, let my soul be vivified by thy spirit. Let that reviving influence which is extended to the whole vegetable creation, rouse me from my slumber, and excite me to lead a life of renewed activity, and to glorify thee with the deepest sense of thy infinite power and goodness. Be this the sacrifice which my soul offers up to thee in this hopeful season!

MARCH 27.

IGNORANCE OF MAN WITH RESPECT TO FUTURITY.

Our ignorance of future events must not be ascribed entirely to the nature of the soul, whose faculties and intelligence are confined within narrow limits, but it proceeds also from the express ordination of the all-wise Creator. He knew the strength of human nature, and would not impart to man a greater degree of knowledge than he was capable of bearing.

The light of knowledge is to the soul what the light of the sun is to the eyes: too much would dazzle without being of any service. It would be too dangerous for the virtue of men, were they endued with the knowledge of futurity; for exterior

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circumstances have, in general, some influence on our mode of thinking and resolutions. The more therefore we knew of future events, the more temptations we should have to overcome, and the more trials would our virtue encounter. And if we were acquainted before-hand with all that is to befal us, how wretched should we be rendered by the possession of this faculty!

Let us suppose that the future events of our life were of an agreeable complection; as long as we remain ignorant of this superior happiness which awaits us, we enjoy our present advantages, while our hearts overflow with gratitude to the giver of all good. But remove the veil, and shew to man a pleasing prospect of futurity, and he will cease to receive satisfaction from the present. He will no longer be contented, happy, and grateful. He anticipates with anxiety and impatience that higher degree of felicity which awaits him, and one day after the other passes without affording any enjoyment. But supposing the prospect of future contingencies to be gloomy: in this case, no sooner should we foresee them, than we should be wretched. The days which, in a state of ignorance, we might have passed in peace and content, would then be rendered miserable by fear and despondency. The idea of the afflictions reserved for us would poison every source of present enjoyment.

What wisdom and mercy, therefore, has God manifested in shrouding from my view the events of futurity, from which the veil is not withdrawn till they actually happen. Never will I wish to anticipate the felicity which awaits me, or to feel the weight of adversity before it arrives.

On the contrary, whenever I think of futurity, I

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will praise the Almighty, who has kept me in total ignorance on that subject, and thus spared me numberless cares, fears, and inquietudes. And why should I wish to draw aside the curtain that hides the future from my sight? If I know that I am reconciled with my God and my Redeemer, I may rest assured that whatever befals me, be it of an agreeable or of an afflicting nature, will infallibly contribute to my advantage. And is it not my gracious God, who directs, alleviates, and governs futurity? He embraces at one view the whole course of my life, not only that part of it which is past, but also that which is before me, and which extends into the recesses of eternity. When I lie down to sleep I commend myself to his care, unconcerned about what may happen to me during the night. When I awake I resign myself to his direction, without anxiety for the events that may occur during the day. Amid the dangers with which I am surrounded, I rely upon his goodness, confident that he will either avert them, or that he will render them conducive to my advantage. And though I am ignorant of the afflictions which await me, I give myself no concern about that subject, because I am satisfied that he knows them, and that he will not fail to comfort and to support me. To this wise and gracious arbiter of my life, I resign with entire confidence the disposal of my fate.

What God has decreed with respect to me must be accomplished; it is the portion which he has destined for me, and which is best suited to my situation. The cup which is presented to me I take without murmuring or repugnance, convinced that it will be salutary for me. I place my lot in

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the hands of the Lord, and I submit with resignation to all that he may think fit to decide with respect to my life and death. Whether I live or die, my portion and my inheritance shall be celestial bliss. Be, therefore, tranquil, O my soul, and let it be thy glory to submit to the will of him who has created thee. Amidst all contingencies thy heavenly Father can conduct thee safely through every danger to the felicity which he has destined for thee.

MARCH 28.

GRADUAL APPROACH OF NIGHT.

As night is of itself a blessing of the Creator, so it is also a beneficent dispensation that it advances by degrees. The sudden transition from the light of day to the gloom of night would be both inconvenient and terrific. So abrupt a change would occasion a general interruption in the labors of men, which in certain affairs that admit not of delay, would be productive of the most prejudicial consequences.

All Nature, both animals and men would be struck with terror, and by this sudden change from light to darkness the organs of vision must necessarily be impaired. Hence it is so ordered that darkness does not surprize us unawares, but approaches by slow degrees; and the twilight which precedes the night affords us time to finish our most pressing affairs, and to make the necessary arrangements.

By these means we are neither alarmed nor incommoded by the arrival of night, but are enabled to prepare for its approach.

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But whence proceed those remains of light which at the end of each day, temper, in some measure, the gloomy aspect of night? We no longer behold the sun, and yet are still cheered by a portion of his genial splendor. Admire, in this circumstance, my dear reader, the beneficial dispensation of Nature. The air which surrounds us has been so arranged by the Creator, that it is capable of rendering this essential service. The atmosphere refracts the rays of the sun, which are reflected upon its higher regions after that luminary is withdrawn from our sight, and thus the blessing of light and the time of labor are considerably prolonged.

Thus graciously hath Providence regulated, not only the great revolutions of the seasons, but also the daily alternation of light and darkness, with an obvious view to our convenience. Let us be thankful for this demonstration of the goodness of our Creator, and adore his wisdom also in this phenomenon. The gradual approach of night in inanimate Nature, reminds me of the evening of my life. That likewise approaches by degrees, and before I am aware, the shades of death will surround me. O that I may have accomplished in time all those things which are necessary for my salvation. I must labor while it is day; a night cometh in which no man can work.

MARCH 29.

THE MAJESTY OF GOD DISPLAYED IN HIS WORKS.

WHY are the works of God so splendid? Why is there such magnificence in every thing we see? Why do we behold such multifarious, such num-

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berless beauties, each object surpassing the other, and clothed with charms peculiar to itself? Why do I every where find new subjects of admiration and astonishment? For this reason: that I may never cease to admire and adore that great Being, who is infinitely greater, more sublime, and more magnificent than any of the objects which he has presented to my senses; that I might be led to this reflection: If the works are so perfect, how glorious must be the maker of them! If the beauty of that which he has created is inexpressibly great, infinitely greater must be that Being who surveys all creation at a single glance.

If the sun has a splendor which my eyes cannot endure, can we be surprized that he who kindled this brilliant orb should dwell in light inaccessible to human vision? Can he be less wonderful than the works which his hand hath formed? The more marvellous are his works, the more he himself must excite astonishment. Were we capable of comprehending the full extent of his greatness, he would cease to be God, or we to be men.

Where then can I more enlarge my views, where can I acquire greater knowledge and more sublime ideas, than in contemplating the illimitable power and majesty of the Godhead? Where else can I procure for all the faculties of my soul, that energy and vigor which befits me for the enjoyment of endless felicity? The more my mind is here expanded and enlarged by contemplating the greatest of all Beings, the more will it be capable of comprehending his grandeur and majesty in a future state.

Henceforward will I, therefore, divide my attention between God and Nature, but only that, in

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the latter, as in a mirror, I may contemplate the image of that Being, whom I cannot behold face to face. I will collect the manifold beauties and perfections distributed over the extended empire of the creation, and when their innumerable multitude fills me with astonishment, I will reflect that, compared with the perfections of their Creator, they are less than a drop of water to the ocean. I will separate from what is excellent and glorious in Nature all ideas of time and space, that I may form a more just conception of the attributes of their Maker. When the discovery of the wants and imperfections of created objects shall have diminished my admiration of their excellence, I will exclaim: If the creation is so beautiful, notwithstanding all its defects, how great and how admirable must He be, whose splendor, ever unobscured, is purer than the light, and more brilliant than the sun.

Direct, then, all thy faculties, O my soul, to the contemplation of the adorable God. Rest not till thou hast soared to the infinite perfections of him who is exalted far above all that is finite and imperfect. Be it thy most important study to learn to know God, because there is nothing greater than God; because the knowledge of him alone can satisfy thy desires, and fill thy heart with uninterrupted peace and joy; and because it is a foretaste of that more perfect knowledge which thou shalt acquire before his throne, and which shall constitute thy happiness in eternity.

Yes, I will exalt thee, my God, thou sovereign of the universe; I will praise thy name now and evermore. I will proclaim thy glory, thy magnificence, and thy wonderful works, that men may

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extol thy power and thy beneficence, and may celebrate thy infinite greatness and majesty. My mouth shall publish the praises of the Lord, and all flesh shall bless for ever and ever the name of the Most High.

MARCH 30.

OF THE ARRANGEMENT OF THE SEASONS IN THE PLANETS REMOTE FROM THE EARTH.

FROM the daily rotation of the earth round its axis, and its annual revolution round the sun, we derive the most important benefits. Should not this induce us to suppose that similar advantages are enjoyed by the other planets? All of them are known to move round their axes, except Mercury, and it is highly probable that this planet has the same kind of motion, though we cannot perceive it. All the planets move in certain orbits round the sun, and even the satellites revolve in the same manner about the primary planets. Now as the motion of the earth produces the revolution of day and night, and of the different seasons, it is but reasonable to suppose that similar changes take place in the other planets.

Venus revolves round her axis in twenty-three hours and one third; Mars accomplishes his revolution in twenty-four hours and two thirds; Jupiter in ten hours; and the moon in about twenty-nine days. If we, therefore, divide the day, that is, the period of this revolution into twenty-four equal parts, each of which we call an hour, the hours of Venus are rather shorter, and those of Mars rather

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longer than those of the earth, while those of Jupiter are not half the length of ours. But if the moon revolves round her axis in twenty-nine days, an hour in that satellite will be equal to more than a day with us. The axes of the planets are in an oblique direction with respect to their orbits, like that of the earth. Nothing can, therefore, be more natural, than that, during their revolution round the sun, their north pole should be more enlightened at one time than another. Is it not then probable that the other planets experience a change of seasons, as well as the alternation of long and short days?

But perhaps it may be asked: To what end are all these reflections? They would be of some utility if they merely contributed to increase our stock of knowledge: but they will appear still more important, if we reflect on the consequences resulting from them. Should we not deduce from them this conclusion, that the other planets are probably inhabited by living creatures? All the planets resemble the earth. Like it they receive light and heat from the sun, and are subject to the vicissitudes of the seasons, and the alternation of day and night. For what purpose would all these arrangements have been made, if those spheres were uninhabited?*

* Mr. Nicholson, in his Introduction to Natural Philosophy, has the following observations on the final causes of the planetary bodies, which are peculiarly applicable in this place:—"The earth is shewn to be a planet in circumstances very similar to the others: we know its final cause—to support a number of inhabitants. And, by analogy, we may conclude, that the others are also habitable worlds;

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O my Creator, what a sublime idea of thy power doth this consideration excite! How immeasurable is the extent of thy empire! How unfathomable are the wonders of thy power and of thy goodness! When I figure to myself all those planetary worlds, resembling our globe, where thy glory is manifested in an equal, nay, perhaps in a superior degree, I am lost in astonishment, and all I can do, is to adore thee with sentiments of the most profound veneration. If then no songs of praise were to ascend to thee from the earth, they would undoubtedly

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though, from their different proportions of heat, it is credible that beings of our make and temperature could not live upon them. However, even that can scarcely be affirmed of all the planets; for the warmest climate on the planet Mars is not colder than many parts of Norway and Lapland are in the spring and autumn. Jupiter, Saturn, and the Georgium Sidus, it must be granted, are colder than any of the inhabited parts of our globe. The greatest heat on the planet Venus exceeds the heat in the island of St. Thomas, on the coast of Guinea, or Sumatra in the East Indies, about as much as the heat in those places exceeds that of the Orkney Islands, or the city of Stockholm, in Sweden: therefore, at 60 deg. north latitude on that planet, if its axis were perpendicular to the plane of its orbit, the heat would not exceed the greatest heat on the earth; and, of course, vegetation like ours might be there carried on, and animals of the species on earth might subsist. If Mercury's axis be supposed to have a like position, a circle of 20 degrees diameter round each pole would enjoy the same temperature as the warmer regions of the earth, though in its hottest climate water would continually boil, and most inflammable substances would be parched up, destroyed, or converted into vapor. But it is not at all necessary that the planets should be peopled with inhabitants like those of the earth; the Creator has doubtless adapted the inhabitants of each to the situation." T.

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resound from those worlds which roll above my head in the regions of boundless space.

But shall I suffer the inhabitants of the other planets to surpass me in the glorification of thy holy name? No, O my God, I will vie with them in celebrating thy praises. I will invite all my fellow-creatures to join in one general anthem, and will proclaim to them: The Lord is God! the Lord is God! Give glory to our God! Hallelujah! Amen!

MARCH 31.

OF THE MANIFOLD CARE OF GOD FOR THE PRESERVATION OF HUMAN LIFE IN EVERY REGION OF THE GLOBE.

WE are now acquainted with a great portion of our globe, and new regions are from time to time discovered. But never has any place yet been found in which Nature produces nothing for the preservation of human life. We know countries where almost every thing is burnt up by the sun, where scarcely any other objects than mountains and plains of sand meet the eye, and where the earth is nearly stripped of verdure: and yet these regions are inhabited by men and other animals, who there find a subsistence. There are places where the genial influence of the sun is scarcely ever felt, where Nature is paralyzed by the rigors of almost perpetual winter; where agriculture and harvests are unknown; nevertheless we find in them men and animals, who contrive to support life in these inhospitable regions. For the productions which Providence has denied to these countries, because they would be parched with the heat or frozen with

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the cold, it has compensated by other gifts adapted to the nature of the climate, and suitable to the nourishment of animals and men. The inhabitants seek with care what Nature presents to them, so that they obtain whatever is essential to their subsistence, and the other conveniencies of life.

In Lapland, Providence has arranged things in such a manner, that what at first appears a very troublesome evil, ultimately contributes to the support of the inhabitants. That country swarms with innumerable insects, which torment the Laplanders with their bite, and from which they have no other means of defending themselves than by keeping a continual smoke in their habitations, and besmearing their faces with tar. These insects deposit their eggs on the water, and thus attract a great number of aquatic birds, which feed upon them. The birds are caught by the Laplanders, and furnish them with one of the principal articles of subsistence.

The Greenlanders in general prefer animal to vegetable food. Of the latter their inhospitable country is almost entirely destitute. It, nevertheless, produces some plants which they make use of; as, for example, sorrel, angelica, and scurvy-grass. The chief food of the Greenlanders consists, however, of the fish called by them angmarset; these they dry on the rocks in the open air, and eat as their daily bread, keeping them in winter in large leathern sacks, or cast-off clothes. In Iceland, where, on account of its northerly situation, the earth is equally unsusceptible of culture, the common people likewise eat dried fish instead of bread. The Dalecarlians, the inhabitants of the northernmost parts of Sweden, having no corn, make bread

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of the bark of the birch and pine tree,* and of a certain root which grows in morasses. The natives of Kamtschatka feed upon the stem of the bear's foot, which they peel and eat raw; while those of Siberia use the root of a species of lily, called martagon, for the same purpose.

O Father of men, whose goodness can never be sufficiently extolled, how admirable is thy paternal care for our preservation! How universally hast thou diffused the means of subsistence over the face of the earth! Thy wisdom foresaw, even before the foundation of the world, all the dangers to which human life would be exposed, and arranged all nature in such a manner, that we every where find a sufficiency for our support. Thou hast established such relations among the inhabitants of the earth, that nations separated from each other by vast oceans, nevertheless labor for their mutual nourishment and their mutual convenience. How adorable is the wisdom of God, who has given us a body so constituted as not to be confined to any particular kind of food! It is a blessing for which we can never be sufficiently thankful, that man doth not live by bread alone, but by every word which proceedeth out of the mouth of God; that is to say, by every thing in nature which God hath com-

* From some experiments made by the ingenious Dr. Darwin, that philosopher concludes, that not only the bark of trees might be used for the purposes of food, but that in years of scarcity the sap-wood of those trees which are not acrid to the taste, might afford nutriment by the preparation of being rasped to powder, and made into bread by a mixture of flour, or by extracting their sugar and mucilage by boiling water. T.

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manded to contribute toward his subsistence, and to which he hath imparted salutary and nutritious qualities. And because he openeth his hand and satisfieth the desire of every living thing, the eyes of all wait upon him, and he giveth them their meat in due season.

Of this the month which I this day conclude affords ample demonstration. Gracious Father, as long as I have breath I will praise thee for the manifold means of subsistence with which thou hast provided me!

HYMN OF PRAISE

FOR THE CONCLUSION OF MARCH.

My soul celebrates its happiness in thy presence, O eternal Being! With a heart overflowing with gratitude I extol the beneficence of my God!

What is man, formed from the dust, that thou shouldst think of him! Maker of the universe, what do we possess that we have not received from thy bounty!

Who spread the firmament, the aspect of which fills us with transport? Who is he, whose divine and bounteous hand clothed the earth with innumerable charms?

Who decked the hills, the vales, the meads with ten thousand beauties? Who planted the forests, and who watereth them with rain and dew? Who expands the seed committed to the bosom of the earth, and causeth it to spring up?

Who restoreth to us each day the sun arrayed in all his splendor? Who hath commanded the moon during the night to give light to man? Who crowneth every year with blessings, to fill our hearts with

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joy and gladness? Who loveth us without interruption, even when his lightnings menace us with annihilation?

Reflect, O man, on the whole course of thy life. Who hath preserved thee till the present moment? Who hath been thy support from earliest infancy?

O Lord, thou sovereign ruler of the universe, thou alone dispensest all blessings to mankind. We are the people that belong to thee, and thou art our God.

How great are thy bounty and thy loving kindness! Thou numberest the very hairs of our head, and visibly aidest us in every danger.

Far as the clouds, extendeth thy bounty; the young raven crieth to thee, O God of mercy, and thy hand nourisheth him.

Almighty friend of man, thou art moved with the afflictions and anguish of the Christian. Thy paternal hand collecteth the tears which he sheds in silence.

From his exalted throne God looketh with an eye of compassion on the humble heart which abaseth itself before him. Raise me, thou immortal soul, toward him by whom thou existest.

Sing praises to him, and adore with holy confidence that God who hath done all things for thee. O my soul, forget not any of his benefits!

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ERRATUM.

Page 230, instead of the two last lines of the note, read: higher than the quantity mentioned by M. Sturm, for in the drier parts of our island it amounts to thirty inches.

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